
Tábuas Logarítmicas

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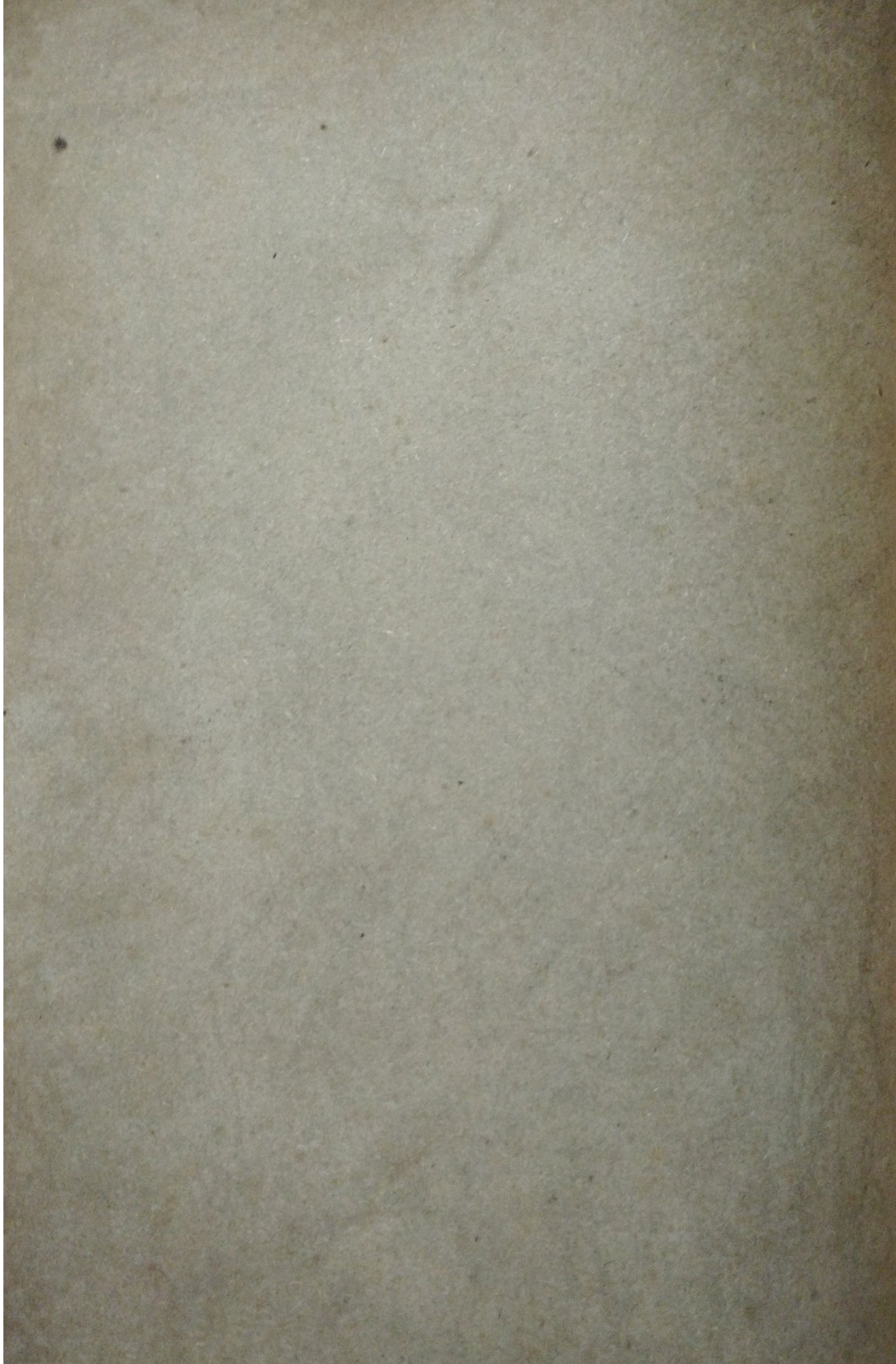
Trigonométricas

CINCO DECIMAIS

NIELSEN

AO LIVRO TÉCNICO LTDA.

RIO DE JANEIRO



TÁBUAS LOGARÍTMICAS
E
TRIGONOMÉTRICAS



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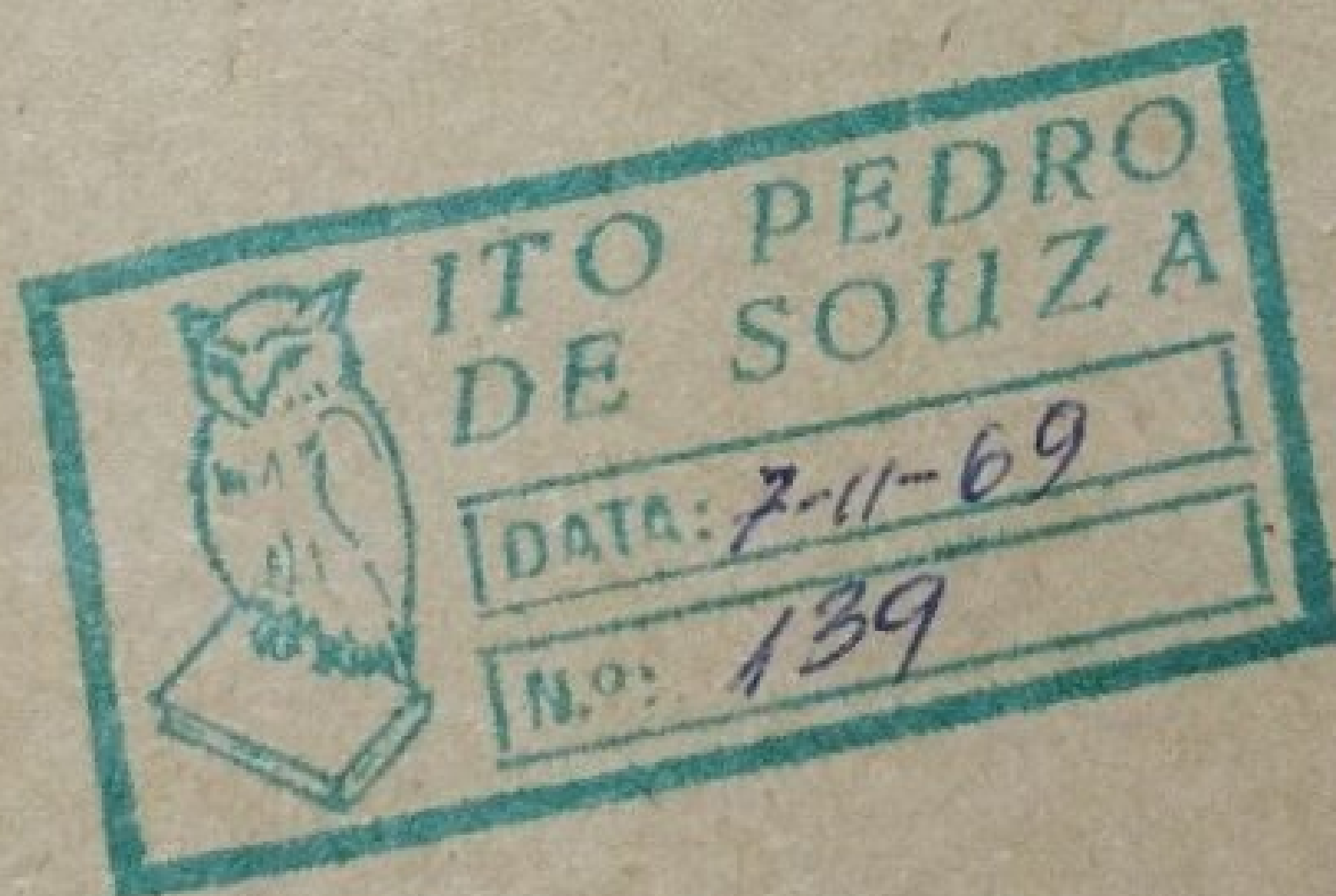
Trigonométricas

CINCO DECIMAIS

INTRODUÇÃO DE

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EMPREGO DAS TÁBUAS

1. Introdução

Antes de estudar particularmente cada tábua é necessário considerar-se a teoria dos logaritmos. O logaritmo de um número N no sistema de base a é o expoente x da potência a que é preciso elevar a base a para se produzir esse número N . A base a é necessariamente positiva e diferente da unidade. O logaritmo de N no sistema de base a é expresso pela seguinte notação: " $\log_a N$ ". Conforme a definição supra pode ser estabelecido o seguinte:

$$\text{Se } N = a^x, \text{ então, } x = \log_a N.$$

O logaritmo assim definido é único; cada número positivo tem um e só um logaritmo, e cada logaritmo representa um e só um número.

As seguintes expressões, que se seguem, são equivalentes:

$$\begin{array}{ll} 3^2 = 9; & \log_3 9 = 2. \\ 25^{1/2} = .5; & \log_{25} 5 = 1/2. \\ 2^{-3} = 1/8; & \log_2 1/8 = -3. \end{array}$$

Propriedades dos Logaritmos

As quatro propriedades seguintes são facilmente demonstradas:

I. O logaritmo de um produto é igual a soma dos logaritmos de seus fatores;

$$\log_a MN = \log_a M + \log_a N.$$

II. O logaritmo de um quociente é igual ao logaritmo do numerador menos o logaritmo do denominador;

$$\log_a \frac{M}{N} = \log_a M - \log_a N.$$

III. O logaritmo da potência k -ésima de um número é igual a k vezes o logaritmo desse número;

$$\log_a N^k = k \log_a N.$$

IV. O logaritmo da raiz q -ésima de um número é igual ao logaritmo desse número dividido por q ;

$$\log_a \sqrt[q]{N} = \frac{1}{q} \log_a N.$$

Estas quatro propriedades são empregadas frequentemente.

Exemplo:

Desenvolver por meio de logaritmos a expressão:

$$\log \frac{(\sqrt{59.32})(0.436)}{(3.294)^3(3.1416)}$$

Solução:

$$\log \frac{(\sqrt{59.32})(0.436)}{(3.294)^3(3.1416)}$$

(propr. II):

$$= \log(\sqrt{59.32})(0.436) - \log(3.294)^3(3.1416)$$

(propr. I):

$$= \log\sqrt{59.32} + \log 0.436 - [\log(3.294)^3 + \log 3.1416]$$

(propr. III e IV):

$$= \frac{1}{2}\log 59.32 + \log 0.436 - 3\log 3.294 - \log 3.1416.$$

Para fins de cálculo a base a é tomada como 10; os logaritmos são então chamados logaritmos decimais. Quando $a = 10$ a base é frequentemente omitida no símbolo abreviado; assim o logaritmo decimal $\log_{10}N$ é simplesmente escrito $\log N$.

Pela definição acima de logaritmo é fácil verificar que a tabela seguinte dá os números cujos logaritmos decimais são números inteiros.

Forma Logarítmica	Forma Exponencial
$10^3 = 1000$	$\log 1000 = 3$
$10^2 = 100$	$\log 100 = 2$
$10^1 = 10$	$\log 10 = 1$
$10^0 = 1$	$\log 1 = 0$
$10^{-1} = 0.1$	$\log 0.1 = -1$
$10^{-2} = 0.01$	$\log 0.01 = -2$
$10^{-3} = 0.001$	$\log 0.001 = -3$

Estudando-se esta tabela é evidente que os logaritmos não são, em geral, números inteiros. São, em geral, um número inteiro mais uma fração própria que é expressa em forma decimal. A parte inteira é chamada característica e a fração decimal é chamada mantissa. Assim:

$$\log N = \text{característica} + \text{mantissa}$$

Em geral as mantissas são decimais infinitas não repetidas que podem ser aproximadas corretamente a tantos algarismos decimais quantos desejados. São compilados num

esquema tabular e são conhecidas como tábuas de logaritmos. Assim a mantissa, ou parte decimal, é encontrada nas tábuas. Esses valores são sempre positivos.

A característica é determinada conforme as duas regras seguintes:

Regra 1.

Se o número N é maior do que 1, a característica do seu logaritmo é uma unidade menor do que o número de algarismos à esquerda do ponto decimal. (Empregue-se nestas tábuas o ponto decimal em lugar da vírgula. Nota do Trad.)

Regra 2.

Se o número N é menor do que 1, a característica do seu logaritmo é negativa; se o primeiro algarismo diferente de zero vem no k -ésimo lugar decimal, a característica é **menos k** .

Uma vez que o logaritmo completo é dado por
 $\log N = \text{característica} + \text{mantissa}$
 e como, além disso, a mantissa é sempre positiva, deve-se escrever a característica negativa $-k$ sempre: $(10-k)-10$. Assim, supondo que a mantissa seja .57325, os logaritmos para as características 1, 0, -1 e -2 são escritos, respectivamente: 1.57325, 0.57325, 9.57325-10, e 8.57325-10.

Exemplos:

As características dos logaritmos dos números na columna esquerda são dadas na columna direita:

Número	Característica
135.2	2
57.35	1
2.693	0
0.3296	9-10
0.0735	8-10
0.000037	5-10

Diz-se que os números 0.05903, 0.590300, 5903, 5903000 possuem a mesma sequência de algarismos. (Os zeros iniciais e finais não são levados em consideração, restando, como algarismos significativos, 5903.) A mantissa do logaritmo é a mesma para todos estes números e é a mantissa para 5903. Só as características são diferentes.

Antilogaritmos.

Se o logaritmo é dado, o problema é encontrar o número correspondente a este logaritmo. Este número é chamado o antilogaritmo. A característica do logaritmo dado determina a posição do ponto decimal (vírgula) no antilogaritmo; a mantissa determina os algarismos do número. Para colocar o ponto decimal (vírgula) no número, usa-se, em ordem invertida, as duas regras anteriormente dadas para a determinação da característica de um número. Assim, supomos que os algarismos do antilogaritmo sejam 37564 e a característica seja 1. Como a característica é positiva, deve-se usar a regra 1. Usando a regra 1, nota-se que deve ter no antilogaritmo 2 algarismos antes do ponto decimal. Assim, o ponto decimal é colocado depois do "7", dando o número 37.564. Se a característica for 8-10, isto é -2, devia-se aplicar a regra 2, ficando no antilogaritmo o primeiro algarismo depois do ponto decimal diferente de zero, no segundo lugar. O número seria, assim, 0.037564.

Cologaritmos.

O cologaritmo de um número é definido como o logaritmo do inverso deste número.

$$\begin{aligned}\text{colog } N &= \log \frac{1}{N} = \log 1 - \log N = 0 - \log N \\ &= (10.00000 - 10) - \log N.\end{aligned}$$

Exemplo:

Se $\log 35.7 = 1.55267$, encontrar o colog 35.7.

Solução:

$$\begin{aligned}\text{colog } 35.7 &= \log 1 - \log 35.7 \\ &= 10.00000 - 10 \\ &\quad - \quad 1.55267 \\ &= \underline{8.44733} - 10.\end{aligned}$$

Para encontrar o cologaritmo mentalmente:

Subtrair de 9 cada algarismo do logaritmo do número, com exceção do último que é subtraído de 10, e subtrair do resultado 10. Assim, no exemplo dado: $9-1=8$; $9-5=4$; $9-5=4$; $9-2=7$; $9-6=3$; $10-7=3$, resultando $8.44733-10$.

Cologaritmos são usados no cálculo quando é preferível somar todos os logaritmos em vez de subtrair alguns deles. Também são usados para encontrar $\log \sec \theta$ e $\log \csc \theta$.

Um traço impresso sobre um 5 final indica que o valor real é menor do que 5. Exemplo: O logaritmo de 59903 a sete decimais é 4.7774486; a cinco decimais, escreve-se este logaritmo 4.7774 $\bar{5}$. Se só 4 decimais são necessárias em um cálculo, o 5 é omitido. O logaritmo acima é escrito, então, 4.7774. Quando nenhum traço é impresso sobre um 5 final e só 4 decimais são necessárias, a quarta decimal é acrescida de 1, e o 5 é omitido. Exemplo: O logaritmo de 7671 a cinco decimais é 3.88485; a quatro decimais, este logaritmo escreve-se 3.8849.

2. Tábua dos Logaritmos Decimais dos Números Naturais.

As pgs. 2-3 contêm as mantissas dos logaritmos de todos os números com um, dois e três algarismos; as características são determinadas pelas regras anteriormente dadas. Se o número tem um ou dois algarismos, é dado na columna esquerda, encabeçada por N, e a mantissa do seu logaritmo é diretamente oposta a ele na segunda columna, encabeçada por "L 0". Assim: $\log 3 = 0.47712$, $\log 0.067 = 8.82607-10$. Se o número tem três algarismos, os dois primeiros são dados na columna "N" e o terceiro na linha horizontal no alto e ao pé da página. A mantissa do seu logaritmo é na intersecção da linha que contem os dois primeiros algarismos e da columna que contem o terceiro. Assim: $\log 184 = 2.26482$, $\log 89.1 = 1.94988$, $\log .937 = 0.97174-10$.

O logaritmo de números de um, dois ou três algarismos pode ser encontrado também nas pgs. 4-21. Por exemplo, encontramos na pg. 2 $\log 12 = 1.07918$; este logaritmo pode ser encontrado, também, na pg. 4, na linha "120" e na columna "L 0". Isto é certo porque 12 e 1200 têm a mesma sequência de algarismos, possuindo, desta maneira, a mesma mantissa.

As pgs. 2-3 não deve n ser usadas para procurar o anti-logaritmo.

As pgs. 4-21 contêm as mantissas dos logaritmos de todos os números até quatro algarismos significativos e podem ser usadas para interpolar a cinco decimais os logaritmos de cinco e seis algarismos significativos. A disposição é igual àquela das pgs. 2-3. Os três primeiros algarismos do número são dados na columna direita, encabeçada por N, e o quarto na linha horizontal no alto ou ao pé da página (estes algarismos encabeçam as columnas, que podem ser chamadas de columna "2", columna "6" etc.). Os três últimos algarismos

são dados nas columnas, encabeçadas por 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, e os dois primeiros, a intervalos, na segunda columna, encabeçada por "L". Quando os dois primeiros algarismos não são encontrados na própria linha, devem ser tirados da primeira linha acima que os contem, excepto quando os três últimos algarismos são precedidos por um asterisco.

A significação do (*) na tábua.

Se os três últimos algarismos da mantissa são precedidos por um *, os dois primeiros algarismos da mantissa devem ser tirados da linha diretamente abaixo daquela onde os três últimos foram encontrados.

Exemplos:

1º Achar $\log 32.46$.

Solução: Conforme regra 1, a característica é 1.

Procure os três primeiros algarismos na columna "N" (pg. 8). Na linha "324" e na columna "6" encontra-se 135; estes são os três últimos algarismos da mantissa; os dois primeiros são encontrados na segunda columna, encabeçada por "L"; são 51. Assim, $\log 32.46 = 1.51135$.

2º Achar $\log 0.3807$.

Solução: Conforme regra 2, a característica é -1.

Procure 380 na columna "N" (pg. 9). Na linha "380" e na columna "7" lê-se .058. Como este número é precedido por um *, os dois primeiros algarismos devem ser tirados da linha diretamente abaixo da linha "380"; assim, oposto a 381 lê-se na columna "L" 58. Logo, $\log 0.3807 = 9.58058 - 10$.

3º Dado $\log N = 2.89382$. Achar N.

Solução: A mantissa é 89382. Os dois primeiros algarismos aparecem na segunda columna, encabeçada por "L". Assim, procure 89 nesta columna (pg. 17). Procure nas columnas "0-9" os três últimos algarismos 382. Estes são encontrados na columna "1", opostos a 783 na columna "N". Logo, os algarismos do número são 7831. A característica é 2; logo, conforme regra 1, haverá três algarismos antes do ponto decimal. Assim: $N = 783.1$.

Interpolação.

Quando o número tem mais de quatro algarismos, o seu logaritmo é encontrado por interpolação. Para diferenças pequenas, presume-se que as diferenças entre números são proporcionais às diferenças entre os seus logaritmos. Por exemplo: é procurado o logaritmo de 224.58. A característica é 2. A mantissa fica entre as para 22450 e 22460 que são, respectivamente, 35122 e 35141. A diferença tabular é encontrada por subtração das duas mantissas consecutivas. Assim, fica a diferença tabular = $35141 - 35122 = 19$. A diferença entre os números 22450 e 22460 é 10, e 22458 é 8 mais do que 22450; desta maneira, a mantissa é $8/10$ de 19 maior que a de 22450. Assim, $8/10$ de 19 = 15 (como inteiro mais aproximado) deve ser somado a 35122, assim que evidentemente $\log 224.58 = 2.35137$.

Tábua de Partes Proporcionais.

Para facilitar a interpolação, os décimos das diferenças tabulares são dados sob PP (Partes Proporcionais) na columna à extrema direita da tábua. Nesta columna, a diferença tabular encabeça um grupo de números. Em cada grupo, os inteiros de 1 a 9 numa columna à esquerda representam o quinto algarismo do número N. Os números à direita representam a correspondente parte proporcional para esta diferença tabular. Assim, a diferença tabular no exemplo acima é 19. Na columna "PP" (veja pg. 6), no grupo encabeçado por "19", e oposto a 8 (o quinto algarismo em N), encontra-se 15.2. Esta é a importância a ser somada à mantissa menor. O ponto decimal em 15.2 indica a posição do último algarismo na tábua dada; assim, a soma acima é

$$\begin{array}{r} 35122 \\ \quad 152 \\ \hline 351372 \end{array}$$

O resultado será arredondado para cinco algarismos.

Exemplo:

Dado $\log N = 7.55469 - 10$. Achar N.

Solução: A mantissa 55469 fica entre 55461 e 55473 que se encontram na tábua como correspondentes a $N = 3586$ e $N = 3587$, respectivamente. A diferença tabular é igual

a $55473 - 55461 = 12$. A diferença PP é $= 55468 - 55461 = 7$ (subtrair sempre a menor mantissa encontrada da mantissa dada, para encontrar esta diferença). No grupo encabeçado por 12 da columna "PP" encontra-se 8.4 à direita; este é o número mais aproximado a 8. À esquerda deste número, encontramos o número 7 que é, por isso, o quinto algarismo de N. Os quatro primeiros são os que correspondem à mantissa menor, encontrada na tábua, isto é, 3586. Logo, os algarismos do número são 35867. A característica é $7-10 = -3$. Assim: $N = 0.0035867$. O logaritmo de um número de seis algarismos pode, da mesma maneira, ser encontrado por interpolação; este grau de exatidão é, entretanto, exigido só raramente de uma tábua a cinco decimais.

Exemplo:

Achar $\log 168.342$.

Solução: A característica é 2.

A mantissa para 1683 é 22608 (pg. 5). A diferença tabular é 26. Na columna "PP" é

a parte proporcional para 4 = 10.4

1/10 parte proporcional para 2 = .52

Logo, a parte proporcional para 42 = 10.92

ou 11 como inteiro mais aproximado. Assim, somando 11 a 22608, encontra-se $\log 168.342 = 2.22619$.

O processo acima descrito pode ser usado ao inverso para encontrar o antilogaritmo a seis algarismos.

As tábuas S e T que aparecem ao pé das páginas, serão explicadas mais tarde.

Cálculos com Emprego de Logaritmos.

Na execução de cálculos com emprego de logaritmos é desejável ter um esquema sistemático para a exposição do trabalho. Só um esquema sistemático pode ser entendido por uma pessoa que não executou os cálculos efetivos. Recomenda-se o seguinte esquema, dado nos exemplos.

Exemplos:

Solução: Conforme as quatro propriedades de logaritmos, vem:

$$\log N = \frac{1}{3} \log 0.9573 + 2 \log 3.21 - \log 98.32.$$

(1)	$\frac{1}{3} \log 0.9573 = \frac{1}{3} [9.98105 - 10] = 9.99368 - 10$
(2)	$2 \log 3.21 = 2 [0.50651] = 1.01302$
(3)	$(1) + (2) = 11.00670 - 10$
(4)	$\log 98.32 = 1.99264$
(5)	$(3) - (4) = 9.01406 - 10$
$N = 0.10329$	

Nota: Para encontrar

$$\frac{1}{3} [9.98105 - 10] = \frac{1}{3} [29.98105 - 30] = 9.99368 - 10$$

reajuste sempre a característica negativa, de maneira que o resultado, depois da divisão, fique x.xxxxx-10.

2º Achar N, se $N = \sqrt{\frac{(0.35926)^3}{673.52}}$

Solução:

$$\log N = \frac{1}{2} [3 \log 0.35926 - \log 673.52].$$

(1)	$3 \log 0.35926 = 3 [9.55541 - 10] = 28.66623 - 30$
(2)	$\log 673.52 = 2.82835$
(3)	$(1) - (2) = 25.83788 - 30$
(4)	$\frac{1}{2} (3) = 15.83788 - 20 = 7.91894 - 10$
$N = 0.0082974$	

Nota: Passando de (3) para (4) efetuamos a modificação $25.83788 - 30 = 15.83788 - 20$, para encontrar, depois da divisão por 2, um resultado de x.xxxxx-10.

Os Logaritmos Naturais.

Como foi demonstrado em uma página anterior, a base de um logaritmo não é necessariamente 10. Existe, entretanto, além de 10, só uma outra base frequentemente usada em problemas matemáticos; esta base é o número e. Se a base de um logaritmo é e, o logaritmo é chamado o logaritmo natural. Em símbolo abreviado escreve-se o logaritmo natural, usualmente, "ln N". Logaritmos decimais podem ser convertidos em logaritmos naturais, multiplicando-os por 2.3025850930. Logaritmos naturais podem ser convertidos em logaritmos

x
decimais, multiplicando-os por 0.4342944819. Em geral, usa-se a seguinte igualdade para conversão da base "a" para a base "b":

$$\log_a N = \frac{\log_b N}{\log_b a}$$

A página 22 contém uma tábua abreviada de logaritmos naturais que dá o logaritmo natural de números inteiros de 1 a 200. O número é dado à esquerda da tábua e o logaritmo à sua direita. Em tábuas dos logaritmos naturais, as características são registradas explicitamente. Por exemplo: $\ln 21 = 3.04452$.

3. Logaritmos das Funções Trigonométricas.

A tábua dos logaritmos das funções trigonométricas foi dividida em duas tábuas. As pgs. 23-46 contêm os logaritmos das funções trigonométricas de 0° a 1° e 89° a 90° para cada segundo, e de 1° a 6° e 84° a 89° para cada 10 segundos. As pgs. 47-92 contêm os logaritmos das funções trigonométricas de minuto a minuto. A segunda parte que é a tábua mais frequentemente usada, será explicada em primeiro lugar. Os ângulos de 0° a 45° são encontrados no alto das páginas com os minutos destes ângulos dados na columna esquerda, devendo-se tirar os titulos das columnas do alto das páginas. Os ângulos de 45° a 90° são encontrados ao pé das páginas, com os minutos na columna à direita, devendo-se tirar os titulos das columnas do pé da página. A interpolação é feita por meio da tábua de partes proporcionais, encabeçada por "PP", da mesma maneira como na tábua dos logaritmos decimais. As diferenças tabulares são dadas na tábua pelas columnas encabeçadas por "d" à direita da columna "L Sin" e "L Cos"; "L Tan" e "L Cot" têm uma diferença comum, e a columna "cd", situada entre elas, refere-se a ambas as columnas. A columna "PP" fornece as diferenças de partes proporcionais para cada segundo..

Os senos e cosenos são sempre menores que 1, assim que os logaritmos destas funções trigonométricas têm sempre uma característica negativa. Da mesma maneira, $\tan \theta$ para $\theta < 45^\circ$ e $\cot \theta$ para θ entre 45° e 90° são menores que 1, possuindo os logaritmos destas funções, igualmente, uma característica negativa. A primeira parte da característica para os logaritmos destas funções é dada explicitamente na tábua; é necessário, pois, subtrair 10 dos logaritmos dados na tábua para as funções acima mencionadas. A característica

é $9.74627 - 9.74613 = 0.00014$ ou simplesmente 14. (Só os dois últimos algarismos são afetados nesta diferença, e a subtração deve ser feita mentalmente.) Em "PP" na columna "30"

lemos, oposto a 10.0 à esquerda 20,
oposto a 4.0 à esquerda 8;

logo, $\theta = 29^{\circ}8'28''$.

4º Dado $\log \cot \theta = 9.81672-10$. Achar θ .

Solução: Procurando na columna "L Cot" os números mais aproximados a 9.81672, encontra-se, na pg. 81 na columna "L Cot" encabeçada ao pé da página, 9.81693 e 9.81666, correspondentes a $56^{\circ}44'$ e $56^{\circ}45'$, respectivamente. A diferença tabular, encontrada na columna "cd", é 27. A diferença entre 9.81693 (use sempre o logaritmo do ângulo menor) e 9.81672 (o logaritmo dado) é 21. Na columna "PP" em 27

lemos, oposto a 18.0 (à direita) 40 (à esquerda),
oposto a 3.2 (à direita) 7 (à esquerda);
logo, a parte proporcional é $47''$, e $\theta = 56^{\circ}44'47''$.

Nota: Desejando encontrar o ângulo ao primeiro décimo de segundo, pode-se executar o cálculo pelas partes proporcionais, como segue:

18.0	é a parte proporcional para	40
2.7	é a parte proporcional para	6
.32	é a parte proporcional para	.7
logo, 21.02	é a parte proporcional para	46.7

e $\theta = 56^{\circ}44'46.7''$.

Os Ângulos Pequenos.

As pgs. 23-46 contêm os logaritmos das funções trigonométricas para os ângulos pequenos a segundos. A disposição geral desta tábua é igual à tábua que acabamos de explicar. Os graus são dados, da mesma maneira, no alto e ao pé das páginas. As funções trigonométricas são também registradas no alto e ao pé das páginas. Nas pgs. 23-35, os minutos e cada 10 segundos são dados em columnas à esquerda e à direita, encabeçadas por ' e ", e os segundos entre as dezenas são dados em uma linha horizontal no alto e ao pé de cada página. Nas pgs. 36-46, os minutos são dados em columnas à esquerda e à direita, encabeçadas por ', e cada 10 segundos em uma

linha horizontal no alto e ao pé de cada página. As columnas de minutos à esquerda leem-se de cima para baixo, as linhas horizontais no alto da esquerda para a direita; estas combinam com os graus indicados no alto das páginas. As columnas de minutos à direita e as linhas horizontais ao pé das páginas, leem-se em direção oposta e em combinação com os graus ao pé das páginas. Nas pgs. 36-46 encontramos os segundos entre as dezenas, pelo uso das columnas "PP". Nas pgs. 24-25, as partes proporcionais são dadas no alto da página; em todas as outras páginas, elas se encontram na columna usual à direita.

Exemplos:

1º Achar $\log \sin 0^\circ 37' 24.37''$.

Solução: Pg. 30 fornece $\log \sin 0^\circ 37' 24'' = 8.03659 - 10$.

A diferença tabular é 19. A columna "PP" dá

parte proporcional para 3 = 5.7

1/10 parte proporcional para 7 = 1.33

logo, parte proporcional para .37 = 7.03 ou 7.

Assim, $\log \sin 0^\circ 37' 24.37'' = 8.03666 - 10$.

2º Achar $\log \tan 0^\circ 42' 17.48''$.

Solução: De pg. 33: $\log \tan 0^\circ 42' 17'' = 8.08992 - 10$. A diferença tabular é 17, e da columna "PP" vem a parte proporcional para .48: 8.16 ou 8.

Assim, $\log \tan 0^\circ 42' 17.48'' = 8.09000 - 10$.

3º Achar $\log \cos 89^\circ 43' 26.4''$.

Solução: De pg. 26: $\log \cos 89^\circ 43' 26'' = 7.68296 - 10$. A diferença tabular é 44, e a columna "PP" dá a parte proporcional para 4 como sendo 17.6 ou 18. Como o coseno é uma função decrescente, esta parte tem de ser subtraída do logaritmo acima.

Logo, o resultado é: $\log \cos 89^\circ 43' 26.4'' = 7.68278 - 10$.

4º Achar $\log \cot 84^\circ 34' 32''$.

Solução: De pg. 45: $\log \cot 84^\circ 34' 30'' = 8.97758 - 10$. A diferença tabular é 23, e a columna "PP" dá a parte proporcional para 2 como sendo 4.6 ou 5. Subtraindo esta do logaritmo acima, obtemos o resultado:

$\log \cot 84^\circ 34' 32'' = 8.97753 - 10$.

5º Dado $\log \tan \theta = 8.74875-10$. Achar θ .

Solução: De pg. 41: $\log \tan 3^\circ 12' 30'' = 8.74861-10$. A diferença tabular é 38 e a diferença de parte proporcional ($8.74875 - 8.74861$) é 14. Da columna "PP" sob 38: a parte proporcional para 3.7 é 14.6. Assim, $\theta = 3^\circ 12' 33.7''$.

Tábuas S e T.

Quando é procurado um ângulo muito pequeno por meio do seu seno ou tangente logaritmico (ou um ângulo perto de 90° por meio do seu coseno ou cotangente logaritmico), e quando exatidão é exigida, devemos usar os cologaritmos de S ou T (pgs. 2-21). Estes são dados nas columnas encabeçadas por "CS" e "CT" (pgs. 48-50). No caso de um logaritmo do seno ou tangente de ângulos muito pequenos (ou do coseno ou cotangente de ângulos perto de 90°), expresso a muitas frações decimais de um segundo, devemos usar a tábua de S e T. As regras para o seu emprego são as seguintes:

Para encontrar o logaritmo:

$$\log \sin \theta = \log \theta'' + \mathbf{S};$$

$$\log \tan \theta = \log \theta'' + \mathbf{T};$$

$$\log \cos \theta = \log (90^\circ - \theta)'' + \mathbf{S};$$

$$\log \cot \theta = \log (90^\circ - \theta)'' + \mathbf{T};$$

onde $\theta'' =$ número de segundos em θ , e $(90^\circ - \theta) =$ número de segundos em $90^\circ - \theta$

Para encontrar o ângulo:

$$\log \theta'' = \log \sin \theta + \mathbf{CS};$$

$$\log \theta'' = \log \tan \theta + \mathbf{CT};$$

$$\log (90^\circ - \theta)'' = \log \cos \theta + \mathbf{CS};$$

$$\log (90^\circ - \theta)'' = \log \cot \theta + \mathbf{CT};$$

onde a notação é a mesma como encima.

Exemplos:

1º Achar $\log \sin 3.4785''$.

Solução: De pg. 8: $\log 3.4785 = 0.54139$
 de pg. 2: $\underline{\hspace{10em} \mathbf{S} = 4.68557-10}$
 $\log \sin 3.4785'' = 5.22696-10$

2º Dado $\log \sin \theta = 6.82973-10$. Achar θ .

Solução: O valor de θ (veja pg. 58) fica entre $0^{\circ}2'$ e $0^{\circ}3'$, ou entre $120''$ e $180''$, e, correspondente a estes valores

$$CS = 5.31443$$

$$\log \sin \theta = 6.82973-10$$

$$\log \theta'' = 2.14416.$$

O número correspondente ao logaritmo 2.14416 é (pg. 4) 139.368. Logo, $\theta = 139.368'' = 0^{\circ}2'19.368''$.

Permuta de Funções Trigonométricas.

Às vezes é necessário encontrar o logaritmo de uma função trigonométrica pelo logaritmo de uma outra função, sem que se procure o próprio ângulo. Para facilitar este cálculo, são dadas tábuas proporcionais especiais, encabeçadas pelas diferenças tabulares de ambas as funções, onde o espaço permite (pgs. 57-92).

Exemplo:

Dado $\log \tan x = 9.67644$. Achar $\log \cos x$.

Solução: A diferença entre o logaritmo dado e o dado na tábua, $9.67622-10$ (veja pg. 73, oposto a $25^{\circ}23'$), é 22. As diferenças tabulares entre as duas funções logarítmicas são, neste lugar, 32 e 6. Na tábua de partes proporcionais para $6/32$, 22 corresponde a 4; este número, subtraído do coseno logarítmico tabular $9.95591-10$, dá o procurado $\log \cos x = 9.95587-10$.

Ângulos Maiores de 90° .

Nos exemplos anteriormente dados, os ângulos sempre foram menores de 90° . Os logaritmos de funções trigonométricas de ângulos maiores de 90° podem ser obtidos pelo seguinte teorema:

Qualquer função de um ângulo θ é numericamente igual à mesma função do ângulo complementar de θ isto é:

(qualquer função de θ) \mp (mesma função de α),

onde

$$\alpha = 180^{\circ} - \theta, \text{ se } \theta \text{ é entre } 90^{\circ} \text{ e } 180^{\circ},$$

$$\alpha = \theta - 180^{\circ}, \text{ se } \theta \text{ é entre } 180^{\circ} \text{ e } 270^{\circ},$$

$$\alpha = 360^{\circ} - \theta, \text{ se } \theta \text{ é entre } 270^{\circ} \text{ e } 360^{\circ}.$$

O "+" ou "-" é determinado pela seguinte tábua:
 Se θ é entre 90° e 180° , o seno e cosecante são positivos, e todas as outras funções são negativas.
 Se θ é entre 180° e 270° , o tangente e cotangente são positivos, e todas as outras funções são negativas.
 Se θ é entre 270° e 360° , o coseno e secante são positivos, e todas as outras funções são negativas.
 Se θ é maior de 360° ,

qualquer função de $\theta =$ mesma função de $(\theta - n360^\circ)$ onde n é um número inteiro.

Exemplos:

1º Achar $\log \sin 112^\circ 15' 17''$.

Solução:

$$\log \sin 112^\circ 15' 17'' = \log \sin 67^\circ 44' 43'' = 9.96638-10.$$

2º Achar $\log \cos 202^\circ 28' 34''$.

Solução:

$\log \cos 202^\circ 28' 34'' = \log \cos 22^\circ 28' 34'' = 9.96569-10 (n)$.
 Como o coseno é negativo para qualquer ângulo entre 180° e 270° , (n) é colocado atrás do logaritmo para indicar que a função trigonométrica é negativa. Êste é o modo usual de indicar que o número correspondente a um logaritmo é negativo.

4. Funções Trigonométricas Naturais.

As pgs. 94-116 contêm as funções trigonométricas naturais para cada minuto. A disposição é a mesma da dos logaritmos das funções trigonométricas, só que não são dadas as diferenças e as partes proporcionais. Para interpolar para estas funções, usa-se o método da interpolação linear.

Exemplos:

1º Achar $\tan 59^\circ 27.3'$.

Solução: Da tábua vem $\tan 59^\circ 27' = 1.6943$ e $\tan 59^\circ 28' = 1.6954$. A diferença tabular é 0.0011; multiplicando esta diferença tabular por .3, o resultado é 0.00033. Êste resultado deve ser somado ao valor para $\tan 59^\circ 27'$. Portanto, $\tan 59^\circ 27.3' = 1.6946$.

O cálculo pode ser demonstrado, da seguinte maneira:

$$\left. \begin{array}{l} \tan 59^{\circ}27' = 1.6943 \\ \tan 59^{\circ}27.3' = 1.6946 \\ \tan 59^{\circ}28' = 1.6954 \end{array} \right] (0.0011)(.3) = 0.00033.$$

2º Achar $\cos 76^{\circ}58'36''$.

Solução:

$$\left. \begin{array}{l} \text{Da tábua: } \cos 76^{\circ}58' = 0.2255 \\ \cos 76^{\circ}58'36'' = 0.2253 \\ \cos 76^{\circ}59' = 0.2252 \end{array} \right] (-.0003) \left(\frac{36}{60} \right) = -.00018.$$

Portanto, $\cos 76^{\circ}58'36'' = 0.2253$.

5. Haversines.

Usadas na navegação e na solução de triângulos oblíquângulos ordinários, estas tábuas dão os valores e os logaritmos de "haversines" de ângulos de 0° a 180° a intervalos de $10'$. As características dos logaritmos ficaram omitidas e devem ser determinadas pelo valor do "haversine", conforme as duas regras para a característica de um logaritmo. A interpolação para os minutos entre as dezenas pode ser feita por interpolação linear, como no caso das funções trigonométricas naturais.

Definição.

A definição do "haversine" é:

$$\text{hav } \theta = \frac{1 - \cos \theta}{2}$$

A Regra do Haversine:

Em qualquer triângulo esférico

$$\text{hav } \alpha = \text{hav}(b - c) + \sin b \cdot \sin c \cdot \text{hav } A,$$

$$\text{hav } b = \text{hav}(\alpha - c) + \sin \alpha \cdot \sin c \cdot \text{hav } B,$$

$$\text{hav } c = \text{hav}(\alpha - b) + \sin \alpha \cdot \sin b \cdot \text{hav } C.$$

6. O Triângulo Retângulo.

Para a solução de problemas referentes a triângulos é conveniente ter as regras necessárias reunidas em uma relação. As regras para o triângulo retângulo são relacionadas

nesta secção; e as regras para o triângulo obliquângulo serão dadas na secção seguinte. Para os símbolos, veja fig. 1:

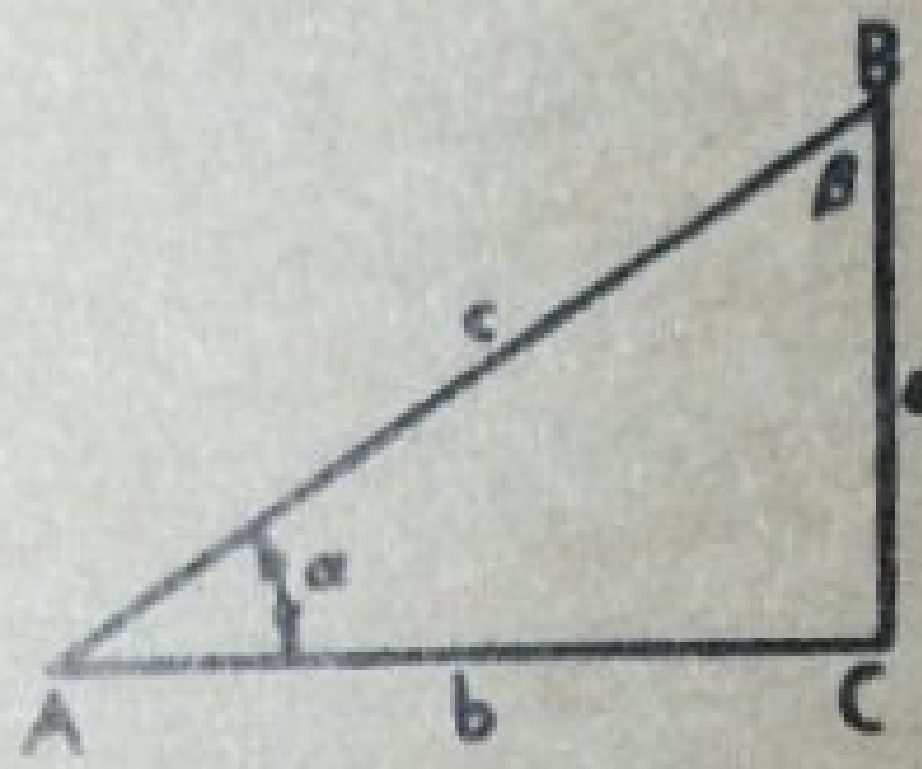


Fig. 1.

- (1) $\sin \alpha = \frac{a}{c} = \cos \beta.$
- (2) $\cos \alpha = \frac{b}{c} = \sin \beta.$
- (3) $\tan \alpha = \frac{a}{b} = \cot \beta.$
- (4) $\cot \alpha = \frac{b}{a} = \tan \beta.$
- (5) $a^2 + b^2 = c^2.$
- (6) $\alpha + \beta = 90^\circ.$

Para cálculos logarítmicos, escreve-se a regra (5) assim:

(7) $a = \sqrt{(c - b)(c + b)};$ (8) $b = \sqrt{(c - a)(c + a)}.$

O cálculo deve sempre ficar demonstrado dentro de um esquema sistemático. Recomendamos o esquema, dado no exemplo, sugerindo, mais, que se prepare o esquema antes de consultar as tábuas para encontrar os logaritmos.

Exemplo:

Resolver o triângulo retângulo ABC, se $\beta = 37^\circ 23' 43''$ e $a = 1.3572$.

Solução:

Dados: $a = 1.3572; \beta = 37^\circ 23' 43''.$						
Regras	Cálculo					
$\alpha = 90^\circ - \beta$	$\alpha = 90^\circ - 37^\circ 23' 43'' = \boxed{52^\circ 36' 17''}$					
$\frac{b}{a} = \tan \beta,$ $b = a \tan \beta.$	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">$\log a = 0.13264$</td> <td rowspan="3" style="border: 1px solid black; text-align: center; vertical-align: middle;">$b = 1.0375$</td> </tr> <tr> <td style="text-align: center;">$\log \tan \beta = 9.88334 - 10$</td> </tr> <tr> <td style="text-align: center;">$\log b = 0.01598$</td> </tr> </table>	$\log a = 0.13264$	$b = 1.0375$	$\log \tan \beta = 9.88334 - 10$	$\log b = 0.01598$	
$\log a = 0.13264$	$b = 1.0375$					
$\log \tan \beta = 9.88334 - 10$						
$\log b = 0.01598$						
$\frac{a}{c} = \cos \beta,$ $c = \frac{a}{\cos \beta}$	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">$\log a = 10.13264 - 10$</td> <td rowspan="3" style="border: 1px solid black; text-align: center; vertical-align: middle;">$c = 1.7083$</td> </tr> <tr> <td style="text-align: center;">$\log \cos \beta = 9.90008 - 10$</td> </tr> <tr> <td style="text-align: center;">$\log c = 0.23256$</td> </tr> </table>	$\log a = 10.13264 - 10$	$c = 1.7083$	$\log \cos \beta = 9.90008 - 10$	$\log c = 0.23256$	
$\log a = 10.13264 - 10$	$c = 1.7083$					
$\log \cos \beta = 9.90008 - 10$						
$\log c = 0.23256$						
$a = \sqrt{(c - b)(c + b)}$ $c - b = 0.6708$ $c + b = 2.7458$ $\log a = 0.13264$	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">$\log (c - b) = 9.82659 - 10$</td> <td rowspan="4" style="border: 1px solid black; text-align: center; vertical-align: middle;">$\frac{1}{2}$ $= 0.13263$</td> </tr> <tr> <td style="text-align: center;">$\log (c + b) = 0.43867$</td> </tr> <tr> <td style="text-align: center;">$= 0.26526$</td> </tr> <tr> <td style="text-align: center;">$= 0.13263$</td> </tr> </table>	$\log (c - b) = 9.82659 - 10$	$\frac{1}{2}$ $= 0.13263$	$\log (c + b) = 0.43867$	$= 0.26526$	$= 0.13263$
$\log (c - b) = 9.82659 - 10$	$\frac{1}{2}$ $= 0.13263$					
$\log (c + b) = 0.43867$						
$= 0.26526$						
$= 0.13263$						

7. Triângulos Obliquângulos.

As regras para um triângulo obliquângulo são as seguintes; para os símbolos, veja fig. 2:

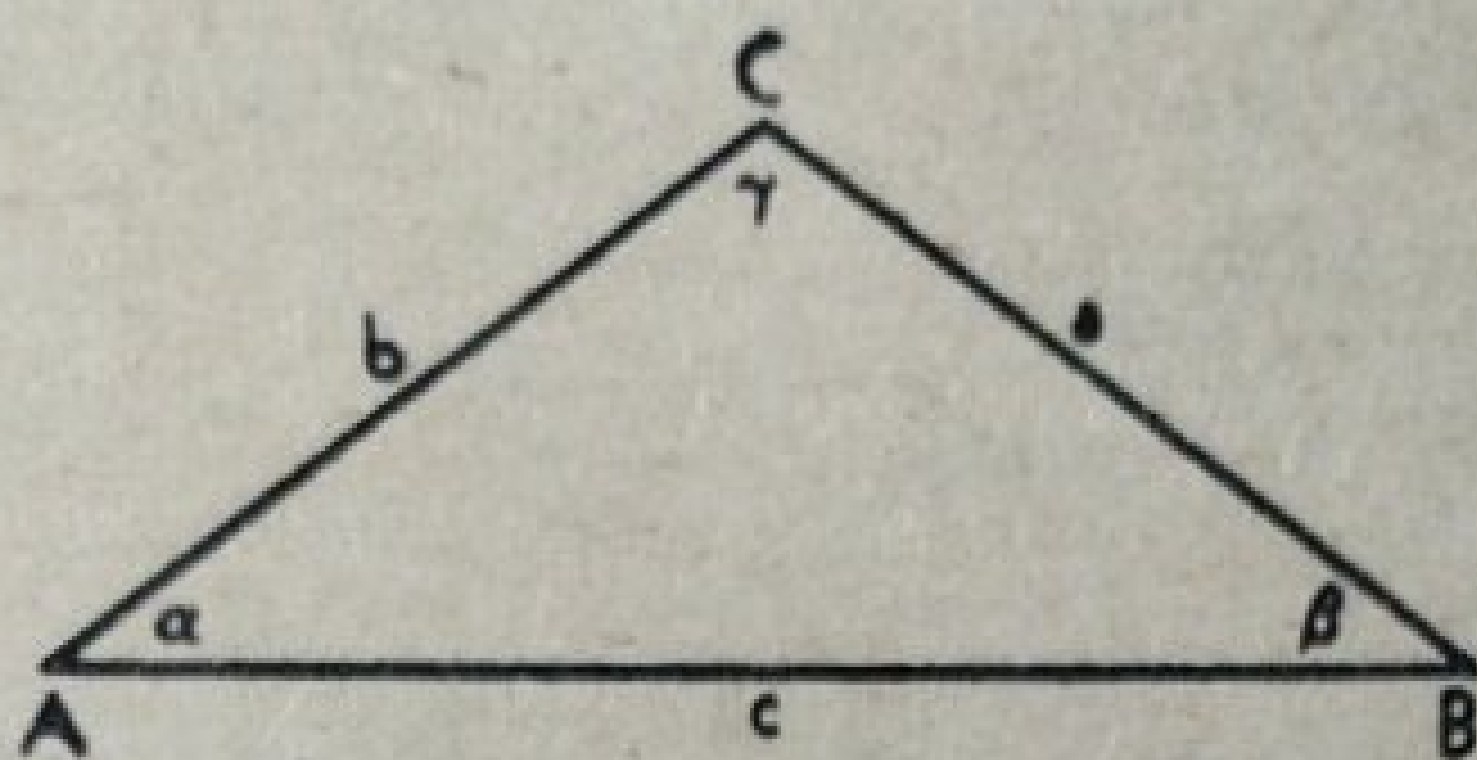


Fig. 2

(1) Soma dos Ângulos:

$$\alpha + \beta + \gamma = 180^\circ.$$

(2) Regra dos Cosenos:

$$a^2 = b^2 + c^2 - 2bc \cos \alpha;$$

$$b^2 = a^2 + c^2 - 2ac \cos \beta;$$

$$c^2 = a^2 + b^2 - 2ab \cos \gamma.$$

Resolvendo para os ângulos, leia-se estas equações:

$$\cos \alpha = \frac{b^2 + c^2 - a^2}{2bc};$$

$$\cos \beta = \frac{a^2 + c^2 - b^2}{2ac};$$

$$\cos \gamma = \frac{a^2 + b^2 - c^2}{2ab}.$$

(3) Regra dos Senos:

$$\frac{a}{\sin \alpha} = \frac{b}{\sin \beta} = \frac{c}{\sin \gamma}.$$

(4) Regra dos Tangentes:

$$\frac{a - b}{a + b} = \frac{\tan^{1/2}(\alpha - \beta)}{\tan^{1/2}(\alpha + \beta)};$$

$$\frac{a - c}{a + c} = \frac{\tan^{1/2}(\alpha - \gamma)}{\tan^{1/2}(\alpha + \gamma)};$$

$$\frac{b - c}{b + c} = \frac{\tan^{1/2}(\beta - \gamma)}{\tan^{1/2}(\beta + \gamma)}.$$

(5) Regras para Meio-Ângulos:

$$\tan \frac{\alpha}{2} = \frac{r}{s - a};$$

$$\tan \frac{\beta}{2} = \frac{r}{s - b};$$

$$\tan \frac{\gamma}{2} = \frac{r}{s - c};$$

onde

$$s = \frac{1}{2}(a + b + c)$$

e

$$r = \sqrt{\frac{(s - a)(s - b)(s - c)}{s}}.$$

(6) Área do Triângulo Obliquângulo:

I. $K = \frac{1}{2}bc \sin \alpha$; $K = \frac{1}{2}ac \sin \beta$; $K = \frac{1}{2}ab \sin \gamma$.
 II. $K = \sqrt{s(s-a)(s-b)(s-c)}$.
 III. $K = \frac{a^2 \sin \beta \sin \gamma}{2 \sin \alpha}$; $K = \frac{b^2 \sin \alpha \sin \gamma}{2 \sin \beta}$;
 $K = \frac{c^2 \sin \alpha \sin \beta}{2 \sin \gamma}$

(7) Solução dos Casos.

Os problemas de triângulos obliquângulos são divididos em quatro casos que podem ser resolvidos pelas regras acima mencionados, de acôrdo com o seguinte sumário:

Casos	Solução
I. Dados dois ângulos e um lado.	Resolver pela regra dos senos. Encontrar a área por III.
II. Dados dois lados e um ângulo oposto.	Caso ambíguo. Resolver pela regra dos senos.
III. Dados dois lados e o ângulo incluído.	Encontrar os ângulos pela regra dos tangentes, depois o terceiro lado pela regra dos senos. Se só o terceiro lado é procurado, usar a regra dos cosenos. Encontrar a área por I.
IV. Dados os três lados.	Resolver pelas regras para meio-ângulos. A regra dos cosenos pode ser usada. Encontrar a área por II.

Exemplo:

Resolver o triângulo ABC, se $\alpha = 39^\circ 28' 14''$, $\gamma = 110^\circ 43' 17''$, $a = 36.483$.

Solução:

Dados: $\alpha = 39^\circ 28' 14''$; $\gamma = 110^\circ 43' 17''$; $a = 36.483$.	
Regras	Cálculo
$\beta = 180^\circ - (\alpha + \gamma)$	$\beta = 180^\circ - (150^\circ 11' 31'') = 29^\circ 48' 29''$
$\frac{b}{\sin \beta} = \frac{a}{\sin \alpha}$ $b = \frac{a \sin \beta}{\sin \alpha}$	$\log a = 1.56209$ $\log \sin \beta = 9.69644 - 10$ $\quad = 11.25853 - 10$ $\log \sin \alpha = 9.80324 - 10$ $\log b = 1.45529$
$\frac{c}{\sin \gamma} = \frac{a}{\sin \alpha}$ $c = \frac{a \sin \gamma}{\sin \alpha}$	$\log a = 1.56209$ $\log \sin \gamma = 9.97096 - 10$ $\quad = 11.53305 - 10$ $\log \sin \alpha = 9.80324 - 10$ $\log c = 1.72981$

8. Identidades Trigonométricas.

I. As Identidades Fundamentais.

$$\begin{aligned} \csc \theta &= \frac{1}{\sin \theta}; & \sec \theta &= \frac{1}{\cos \theta}; & \tan \theta &= \frac{1}{\cot \theta} \\ \tan \theta &= \frac{\sin \theta}{\cos \theta}; & \cot \theta &= \frac{\cos \theta}{\sin \theta}; \\ \sin^2 \theta + \cos^2 \theta &= 1; \\ \tan^2 \theta + 1 &= \sec^2 \theta; \\ \cot^2 \theta + 1 &= \csc^2 \theta. \end{aligned}$$

II. Ângulos Complementares.

$$\begin{aligned} \sin \theta &= \cos (90^\circ - \theta); & \cos \theta &= \sin (90^\circ - \theta); \\ \tan \theta &= \cot (90^\circ - \theta); & \cot \theta &= \tan (90^\circ - \theta); \\ \sec \theta &= \csc (90^\circ - \theta); & \csc \theta &= \sec (90^\circ - \theta). \end{aligned}$$

III. Ângulos Negativos.

$$\begin{aligned} \sin (-\theta) &= -\sin \theta; & \cot (-\theta) &= -\cot \theta; \\ \cos (-\theta) &= \cos \theta; & \sec (-\theta) &= \sec \theta; \\ \tan (-\theta) &= -\tan \theta; & \csc (-\theta) &= -\csc \theta. \end{aligned}$$

IV. Ângulos Múltiplos.

$$\begin{aligned} \sin (\alpha + \beta) &= \sin \alpha \cos \beta + \cos \alpha \sin \beta; \\ \cos (\alpha + \beta) &= \cos \alpha \cos \beta - \sin \alpha \sin \beta; \end{aligned}$$

$$\tan (\alpha + \beta) = \frac{\tan \alpha + \tan \beta}{1 - \tan \alpha \tan \beta}.$$

$$\begin{aligned} \sin 2\alpha &= 2 \sin \alpha \cos \alpha; \\ \cos 2\alpha &= \cos^2 \alpha - \sin^2 \alpha; \end{aligned}$$

$$\tan 2\alpha = \frac{2 \tan \alpha}{1 - \tan^2 \alpha}.$$

$$\sin \frac{1}{2}\alpha = \pm \sqrt{\frac{1 - \cos \alpha}{2}};$$

$$\cos \frac{1}{2}\alpha = \pm \sqrt{\frac{1 + \cos \alpha}{2}};$$

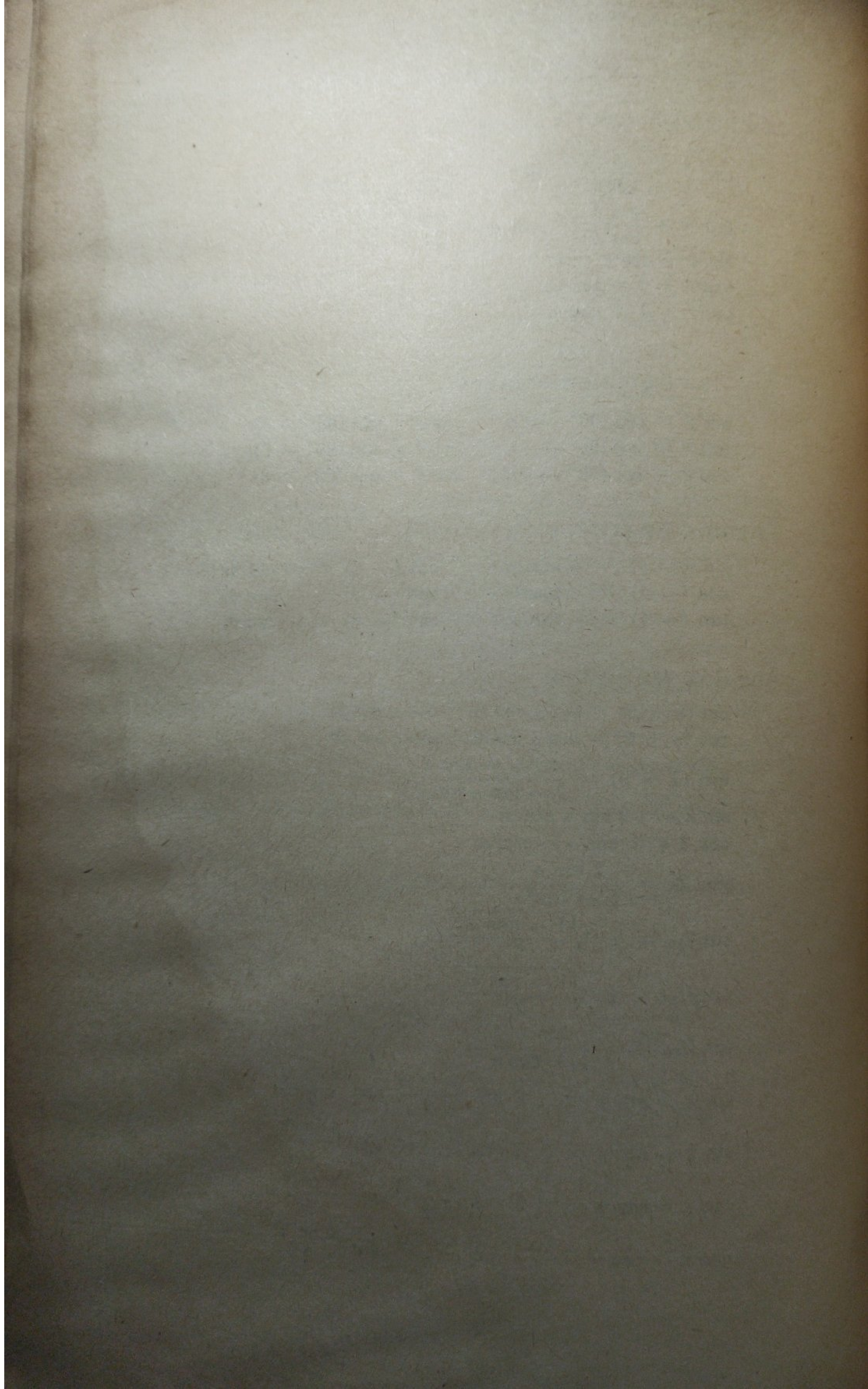
$$\tan \frac{1}{2}\alpha = \frac{\sin \alpha}{1 + \cos \alpha};$$

$$\sin x + \sin y = 2 \sin \frac{x + y}{2} \cos \frac{x - y}{2};$$

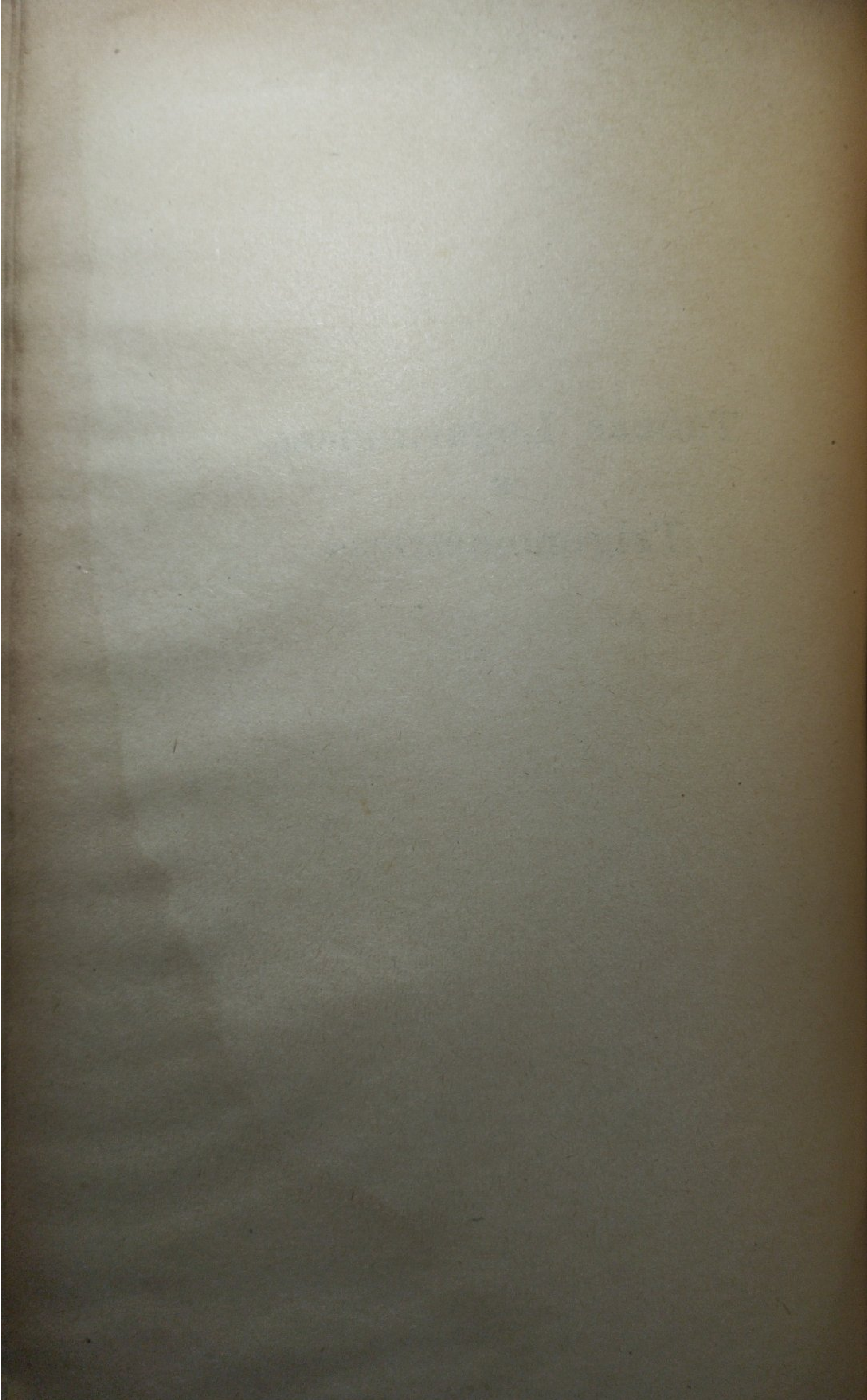
$$\sin x - \sin y = 2 \cos \frac{x + y}{2} \sin \frac{x - y}{2};$$

$$\cos x + \cos y = 2 \cos \frac{x + y}{2} \cos \frac{x - y}{2};$$

$$\cos x - \cos y = -2 \sin \frac{x + y}{2} \sin \frac{x - y}{2}.$$



**Tábuas Logaritmicas
e
Trigonométricas**



**Tábua dos logaritmos decimais
dos números naturais**

COM AS AUXILIARES S E T

N	L 0	1	2	3	4	5	6	7	8	9	
0	— ∞	00 000	30 103	47 712	60 206	69 897	77 815	84 510	90 309	95 424	
1	00 000	04 139	07 918	11 394	14 613	17 609	20 412	23 045	25 527	27 875	
2	30 103	32 222	34 242	36 173	38 021	39 794	41 497	43 136	44 716	46 240	
3	47 712	49 136	50 515	51 851	53 148	54 407	55 630	56 820	57 978	59 106	
4	60 206	61 278	62 325	63 347	64 345	65 321	66 276	67 210	68 124	69 020	
5	69 897	70 757	71 600	72 428	73 239	74 036	74 819	75 587	76 343	77 085	
6	77 815	78 533	79 239	79 934	80 618	81 291	81 954	82 607	83 251	83 885	
7	84 510	85 126	85 733	86 332	86 923	87 506	88 081	88 649	89 209	89 763	
8	90 309	90 849	91 381	91 908	92 428	92 942	93 450	93 952	94 448	94 939	
9	95 424	95 904	96 379	96 848	97 313	97 772	98 227	98 677	99 123	99 564	
10	00 000	00 432	00 860	01 284	01 703	02 119	02 531	02 938	03 342	03 743	
11	04 139	04 532	04 922	05 308	05 690	06 070	06 446	06 819	07 188	07 555	
12	07 918	08 279	08 636	08 991	09 342	09 691	10 037	10 380	10 721	11 059	
13	11 394	11 727	12 057	12 385	12 710	13 033	13 354	13 672	13 988	14 301	
14	14 613	14 922	15 229	15 534	15 836	16 137	16 435	16 732	17 026	17 319	
15	17 609	17 898	18 184	18 469	18 752	19 033	19 312	19 590	19 866	20 140	
16	20 412	20 683	20 952	21 219	21 484	21 748	22 011	22 272	22 531	22 789	
17	23 045	23 300	23 553	23 805	24 055	24 304	24 551	24 797	25 042	25 285	
18	25 527	25 768	26 007	26 245	26 482	26 717	26 951	27 184	27 416	27 646	
19	27 875	28 103	28 330	28 556	28 780	29 003	29 226	29 447	29 667	29 885	
20	30 103	30 320	30 535	30 750	30 963	31 175	31 387	31 597	31 806	32 015	
21	32 222	32 428	32 634	32 838	33 041	33 244	33 445	33 646	33 846	34 044	
22	34 242	34 439	34 635	34 830	35 025	35 218	35 411	35 603	35 793	35 984	
23	36 173	36 361	36 549	36 736	36 922	37 107	37 291	37 475	37 658	37 840	
24	38 021	38 202	38 382	38 561	38 739	38 917	39 094	39 270	39 445	39 620	
25	39 794	39 967	40 140	40 312	40 483	40 654	40 824	40 993	41 162	41 330	
26	41 497	41 664	41 830	41 996	42 160	42 325	42 488	42 651	42 813	42 975	
27	43 136	43 297	43 457	43 616	43 775	43 933	44 091	44 248	44 404	44 560	
28	44 716	44 871	45 025	45 179	45 332	45 484	45 637	45 788	45 939	46 090	
29	46 240	46 389	46 538	46 687	46 835	46 982	47 129	47 276	47 422	47 567	
30	47 712	47 857	48 001	48 144	48 287	48 430	48 572	48 714	48 855	48 996	
31	49 136	49 276	49 415	49 554	49 693	49 831	49 969	50 106	50 243	50 379	
32	50 515	50 651	50 786	50 920	51 055	51 188	51 322	51 455	51 587	51 720	
33	51 851	51 983	52 114	52 244	52 375	52 504	52 634	52 763	52 892	53 020	
34	53 148	53 275	53 403	53 529	53 656	53 782	53 908	54 033	54 158	54 283	
35	54 407	54 531	54 654	54 777	54 900	55 023	55 145	55 267	55 388	55 509	
36	55 630	55 751	55 871	55 991	56 110	56 229	56 348	56 467	56 585	56 703	
37	56 820	56 937	57 054	57 171	57 287	57 403	57 519	57 634	57 749	57 864	
38	57 978	58 092	58 206	58 320	58 433	58 546	58 659	58 771	58 883	58 995	
39	59 106	59 218	59 329	59 439	59 550	59 660	59 770	59 879	59 988	60 097	
40	60 206	60 314	60 423	60 531	60 638	60 746	60 853	60 959	61 066	61 172	
41	61 278	61 384	61 490	61 595	61 700	61 805	61 909	62 014	62 118	62 221	
42	62 325	62 428	62 531	62 634	62 737	62 839	62 941	63 043	63 144	63 246	
43	63 347	63 448	63 548	63 649	63 749	63 849	63 949	64 048	64 147	64 246	
44	64 345	64 444	64 542	64 640	64 738	64 836	64 933	65 031	65 128	65 225	
45	65 321	65 418	65 514	65 610	65 706	65 801	65 896	65 992	66 087	66 181	
46	66 276	66 370	66 464	66 558	66 652	66 745	66 839	66 932	67 025	67 117	
47	67 210	67 302	67 394	67 486	67 578	67 669	67 761	67 852	67 943	68 034	
48	68 124	68 215	68 305	68 395	68 485	68 574	68 664	68 753	68 842	68 931	
49	69 020	69 108	69 197	69 285	69 373	69 461	69 548	69 636	69 723	69 810	
50	69 897	69 984	70 070	70 157	70 243	70 329	70 415	70 501	70 586	70 672	
N	L 0	1	2	3	4	5	6	7	8	9	
60	= 0° 1'	S	4.68 557	T	4.68 557					4.68 558	
120	= 0° 2'		4.68 557		4.68 557	300	= 0° 5'	S	4.68 557	T	4.68 558
180	= 0° 3'		4.68 557		4.68 557	360	= 0° 6'		4.68 557		4.68 558
240	= 0° 4'		4.68 557		4.68 557	420	= 0° 7'		4.68 557		4.68 558
			4.68 557		4.68 558	480	= 0° 8'		4.68 557		4.68 558

N	L 0	1	2	3	4	5	6	7	8	9
50	69 897	69 984	70 070	70 157	70 243	70 329	70 415	70 501	70 586	70 672
51	70 757	70 842	70 927	71 012	71 096	71 181	71 265	71 349	71 433	71 517
52	71 600	71 684	71 767	71 850	71 933	72 016	72 099	72 181	72 263	72 346
53	72 428	72 509	72 591	72 673	72 754	72 835	72 916	72 997	73 078	73 159
54	73 239	73 320	73 400	73 480	73 560	73 640	73 719	73 799	73 878	73 957
55	74 036	74 115	74 194	74 273	74 351	74 429	74 507	74 586	74 663	74 741
56	74 819	74 896	74 974	75 051	75 128	75 205	75 282	75 358	75 435	75 511
57	75 587	75 664	75 740	75 815	75 891	75 967	76 042	76 118	76 193	76 268
58	76 343	76 418	76 492	76 567	76 641	76 716	76 790	76 864	76 938	77 012
59	77 085	77 159	77 232	77 305	77 379	77 452	77 525	77 597	77 670	77 743
60	77 815	77 887	77 960	78 032	78 104	78 176	78 247	78 319	78 390	78 462
61	78 533	78 604	78 675	78 746	78 817	78 888	78 958	79 029	79 099	79 169
62	79 239	79 309	79 379	79 449	79 518	79 588	79 657	79 727	79 796	79 865
63	79 934	80 003	80 072	80 140	80 209	80 277	80 346	80 414	80 482	80 550
64	80 618	80 686	80 754	80 821	80 889	80 956	81 023	81 090	81 158	81 224
65	81 291	81 358	81 425	81 491	81 558	81 624	81 690	81 757	81 823	81 889
66	81 954	82 020	82 086	82 151	82 217	82 282	82 347	82 413	82 478	82 543
67	82 607	82 672	82 737	82 802	82 866	82 930	82 995	83 059	83 123	83 187
68	83 251	83 315	83 378	83 442	83 506	83 569	83 632	83 696	83 759	83 822
69	83 885	83 948	84 011	84 073	84 136	84 198	84 261	84 323	84 386	84 448
70	84 510	84 572	84 634	84 696	84 757	84 819	84 880	84 942	85 003	85 065
71	85 126	85 187	85 248	85 309	85 370	85 431	85 491	85 552	85 612	85 673
72	85 733	85 794	85 854	85 914	85 974	86 034	86 094	86 153	86 213	86 273
73	86 332	86 392	86 451	86 510	86 570	86 629	86 688	86 747	86 806	86 864
74	86 923	86 982	87 040	87 099	87 157	87 216	87 274	87 332	87 390	87 448
75	87 506	87 564	87 622	87 679	87 737	87 795	87 852	87 910	87 967	88 024
76	88 081	88 138	88 195	88 252	88 309	88 366	88 423	88 480	88 536	88 593
77	88 649	88 705	88 762	88 818	88 874	88 930	88 986	89 042	89 098	89 154
78	89 209	89 265	89 321	89 376	89 432	89 487	89 542	89 597	89 653	89 708
79	89 763	89 818	89 873	89 927	89 982	90 037	90 091	90 146	90 200	90 255
80	90 309	90 363	90 417	90 472	90 526	90 580	90 634	90 687	90 741	90 795
81	90 849	90 902	90 956	91 009	91 062	91 116	91 169	91 222	91 275	91 328
82	91 381	91 434	91 487	91 540	91 593	91 645	91 698	91 751	91 803	91 855
83	91 908	91 960	92 012	92 065	92 117	92 169	92 221	92 273	92 324	92 376
84	92 428	92 480	92 531	92 583	92 634	92 686	92 737	92 788	92 840	92 891
85	92 942	92 993	93 044	93 095	93 146	93 197	93 247	93 298	93 349	93 399
86	93 450	93 500	93 551	93 601	93 651	93 702	93 752	93 802	93 852	93 902
87	93 952	94 002	94 052	94 101	94 151	94 201	94 250	94 300	94 349	94 399
88	94 448	94 498	94 547	94 596	94 645	94 694	94 743	94 792	94 841	94 890
89	94 939	94 988	95 036	95 085	95 134	95 182	95 231	95 279	95 328	95 376
90	95 424	95 472	95 521	95 569	95 617	95 665	95 713	95 761	95 809	95 856
91	95 904	95 952	95 999	96 047	96 095	96 142	96 190	96 237	96 284	96 332
92	96 379	96 426	96 473	96 520	96 567	96 614	96 661	96 708	96 755	96 802
93	96 848	96 895	96 942	96 988	97 035	97 081	97 128	97 174	97 220	97 267
94	97 313	97 359	97 405	97 451	97 497	97 543	97 589	97 635	97 681	97 727
95	97 772	97 818	97 864	97 909	97 955	98 000	98 046	98 091	98 137	98 182
96	98 227	98 272	98 318	98 363	98 408	98 453	98 498	98 543	98 588	98 632
97	98 677	98 722	98 767	98 811	98 856	98 900	98 945	98 989	99 034	99 078
98	99 123	99 167	99 211	99 255	99 300	99 344	99 388	99 432	99 476	99 520
99	99 564	99 607	99 651	99 695	99 739	99 782	99 826	99 870	99 913	99 957
100	00 000	00 043	00 087	00 130	00 173	00 217	00 260	00 303	00 346	00 389

N	L 0	1	2	3	4	5	6	7	8	9	
540	= 0° 9'	S	4.68 557	T	4.68 558	780	= 0° 13'	S	4.68 557	T	4.68 558
600	= 0 10		4.68 557		4.68 558	840	= 0 14		4.68 557		4.68 558
660	= 0 11		4.68 557		4.68 558	900	= 0 15		4.68 557		4.68 558
720	= 0 12		4.68 557		4.68 558	960	= 0 16		4.68 557		4.68 558

N	L 0	1	2	3	4	5	6	7	8	9	P P		
100	00 000	043	087	130	173	217	260	303	346	389			
101	432	475	518	561	604	647	689	732	775	817	44	43	42
102	860	903	945	988	*030	*072	*115	*157	*199	*242	1	4.4	4.3
103	01 284	326	368	410	452	494	536	578	620	662	2	8.8	8.6
104	703	745	787	828	870	912	953	995	*036	*078	3	13.2	12.9
105	02 119	160	202	243	284	325	366	407	449	490	4	17.6	17.2
106	531	572	612	653	694	735	776	816	857	898	5	22.0	21.5
107	958	979	*019	*060	*100	*141	*181	*222	*262	*302	6	26.4	25.8
108	03 342	383	423	463	503	543	583	623	663	703	7	30.8	30.1
109	743	782	822	862	902	941	981	*021	*060	*100	8	35.2	34.4
110	04 139	179	218	258	297	336	376	415	454	493	9	39.6	38.7
111	532	571	610	650	689	727	766	805	844	883			
112	922	961	999	*038	*077	*115	*154	*192	*231	*269	41	40	39
113	05 308	346	385	423	461	500	538	576	614	652	1	4.1	4.0
114	690	729	767	805	843	881	918	956	994	*032	2	8.2	8.0
115	06 070	108	145	183	221	258	296	333	371	408	3	12.3	12.0
116	446	483	521	558	595	633	670	707	744	781	4	16.4	16.0
117	819	856	893	930	967	*004	*041	*078	*115	*151	5	20.5	20.0
118	07 188	225	262	298	335	372	408	445	482	518	6	24.6	24.0
119	555	591	628	664	700	737	773	809	846	882	7	28.7	28.0
120	918	954	990	*027	*063	*099	*135	*171	*207	*243	8	32.8	32.0
121	08 279	314	350	386	422	458	493	529	565	600	9	36.9	36.0
122	636	672	707	743	778	814	849	884	920	955			
123	991	*026	*061	*096	*132	*167	*202	*237	*272	*307	38	37	36
124	09 342	377	412	447	482	517	552	587	621	656	1	3.8	3.7
125	691	726	760	795	830	864	899	934	968	*003	2	7.6	7.4
126	10 037	072	106	140	175	209	243	278	312	346	3	11.4	11.1
127	380	415	449	483	517	551	585	619	653	687	4	15.2	14.8
128	721	755	789	823	857	890	924	958	992	*025	5	19.0	18.5
129	11 059	093	126	160	193	227	261	294	327	361	6	22.8	22.2
130	394	428	461	494	528	561	594	628	661	694	7	26.6	25.9
131	727	760	793	826	860	893	926	959	992	*024	8	30.4	29.6
132	12 057	090	123	156	189	222	254	287	320	352	9	34.2	33.3
133	385	418	450	483	516	548	581	613	646	678			
134	710	743	775	808	840	872	905	937	969	*001	35	34	33
135	13 033	066	098	130	162	194	226	258	290	322	1	3.5	3.4
136	354	386	418	450	481	513	545	577	609	640	2	7.0	6.8
137	672	704	735	767	799	830	862	893	925	956	3	10.5	10.2
138	988	*019	*051	*082	*114	*145	*176	*208	*239	*270	4	14.0	13.6
139	14 301	333	364	395	426	457	489	520	551	582	5	17.5	17.0
140	613	644	675	706	737	768	799	829	860	891	6	21.0	20.4
141	922	953	983	*014	*045	*076	*106	*137	*168	*198	7	24.5	23.8
142	15 229	259	290	320	351	381	412	442	473	503	8	28.0	27.2
143	534	564	594	625	655	685	715	746	776	806	9	31.5	30.6
144	836	866	897	927	957	987	*017	*047	*077	*107			
145	16 137	167	197	227	256	286	316	346	376	406	32	31	30
146	435	465	495	524	554	584	613	643	673	702	1	3.2	3.1
147	732	761	791	820	850	879	909	938	967	997	2	6.4	6.2
148	17 026	056	085	114	143	173	202	231	260	289	3	9.6	9.3
149	319	348	377	406	435	464	493	522	551	580	4	12.8	12.4
150	17 609	638	667	696	725	754	782	811	840	869	5	16.0	15.5
N	L 0	1	2	3	4	5	6	7	8	9			
960'	=0° 16' S												
1020	=0 17	4.68	557	T	4.68	558							
1080	=0 18	4.68	557		4.68	558	1260'	=0° 21' S	4.68	557	T	4.68	558
1140	=0 19	4.68	557		4.68	558	1320	=0 22	4.68	557		4.68	558
1200	=0 20	4.68	557		4.68	558	1380	=0 23	4.68	557		4.68	558
		4.68	557		4.68	558	1440	=0 24	4.68	557		4.68	558
					4.68	558	1500	=0 25	4.68	557		4.68	558

N	L 0	1	2	3	4	5	6	7	8	9	P P		
960'	=0° 16' S												
1020	=0 17	4.68	557	T	4.68	558							
1080	=0 18	4.68	557		4.68	558	1260'	=0° 21' S	4.68	557	T	4.68	558
1140	=0 19	4.68	557		4.68	558	1320	=0 22	4.68	557		4.68	558
1200	=0 20	4.68	557		4.68	558	1380	=0 23	4.68	557		4.68	558
		4.68	557		4.68	558	1440	=0 24	4.68	557		4.68	558
					4.68	558	1500	=0 25	4.68	557		4.68	558

N	L 0	1	2	3	4	5	6	7	8	9	P P	
150	17 609	638	667	696	725	754	782	811	840	869		
151	898	926	955	984	*013	*041	*070	*099	*127	*156	29	28
152	18 184	213	241	270	298	327	355	384	412	441	1	2.9 2.8
153	469	498	526	554	583	611	639	667	696	724	2	5.8 5.6
154	752	780	808	837	865	893	921	949	977	*005	3	8.7 8.4
155	19 033	061	089	117	145	173	201	229	257	285	4	11.6 11.2
156	312	340	368	396	424	451	479	507	535	562	5	14.5 14.0
157	590	618	645	673	700	728	756	783	811	838	6	17.4 16.8
158	866	893	921	948	976	*003	*030	*058	*085	*112	7	20.3 19.6
159	20 140	167	194	222	249	276	303	330	358	385	8	23.2 22.4
160	412	439	466	493	520	548	575	602	629	656	9	26.1 25.2
161	683	710	737	763	790	817	844	871	898	925		27 26
162	952	978	*005	*032	*059	*085	*112	*139	*165	*192	1	2.7 2.6
163	21 219	245	272	299	325	352	378	405	431	458	2	5.4 5.2
164	484	511	537	564	590	617	643	669	696	722	3	8.1 7.8
165	748	775	801	827	854	880	906	932	958	985	4	10.8 10.4
166	22 011	037	063	089	115	141	167	194	220	246	5	13.5 13.0
167	272	298	324	350	376	401	427	453	479	505	6	16.2 15.6
168	531	557	583	608	634	660	686	712	737	763	7	18.9 18.2
169	789	814	840	866	891	917	943	968	994	*019	8	21.6 20.8
170	23 045	070	096	121	147	172	198	223	249	274	9	24.3 23.4
171	300	325	350	376	401	426	452	477	502	528		25
172	553	578	603	629	654	679	704	729	754	779	1	2.5
173	805	830	855	880	905	930	955	980	*005	*030	2	5.0
174	24 055	080	105	130	155	180	204	229	254	279	3	7.5
175	304	329	353	378	403	428	452	477	502	527	4	10.0
176	551	576	601	625	650	674	699	724	748	773	5	12.5
177	797	822	846	871	895	920	944	969	993	*018	6	15.0
178	25 042	066	091	115	139	164	188	212	237	261	7	17.5
179	285	310	334	358	382	406	431	455	479	503	8	20.0
180	527	551	575	600	624	648	672	696	720	744	9	22.5
181	768	792	816	840	864	888	912	935	959	983		24 23
182	26 007	031	055	079	102	126	150	174	198	221	1	2.4 2.3
183	245	269	293	316	340	364	387	411	435	458	2	4.8 4.6
184	482	505	529	553	576	600	623	647	670	694	3	7.2 6.9
185	717	741	764	788	811	834	858	881	905	928	4	9.6 9.2
186	951	975	998	*021	*045	*068	*091	*114	*138	*161	5	12.0 11.5
187	27 184	207	231	254	277	300	323	346	370	393	6	14.4 13.8
188	416	439	462	485	508	531	554	577	600	623	7	16.8 16.1
189	646	669	692	715	738	761	784	807	830	852	8	19.2 18.4
190	875	898	921	944	967	989	*012	*035	*058	*081	9	21.6 20.7
191	28 103	126	149	171	194	217	240	262	285	307		22 21
192	330	353	375	398	421	443	466	488	511	533	1	2.2 2.1
193	556	578	601	623	646	668	691	713	735	758	2	4.4 4.2
194	780	803	825	847	870	892	914	937	959	981	3	6.6 6.3
195	29 003	026	048	070	092	115	137	159	181	203	4	8.8 8.4
196	226	248	270	292	314	336	358	380	403	425	5	11.0 10.5
197	447	469	491	513	535	557	579	601	623	645	6	13.2 12.6
198	667	688	710	732	754	776	798	820	842	863	7	15.4 14.7
199	885	907	929	951	973	994	*016	*038	*060	*081	8	17.6 16.8
200	30 103	125	146	168	190	211	233	255	276	298	9	19.8 18.9

N	L 0	1	2	3	4	5	6	7	8	9	P P				
1500'	=0° 25'	S	4.68	557	T	4.68	558	1800'	=0° 30'	S	4.68	557	T	4.68	559
1560	=0 26		4.68	557		4.68	558	1860	=0 31		4.68	557		4.68	559
1620	=0 27		4.68	557		4.68	558	1920	=0 32		4.68	557		4.68	559
1680	=0 28		4.68	557		4.68	558	1980	=0 33		4.68	557		4.68	559
1740	=0 29		4.68	557		4.68	559	2040	=0 34		4.68	557		4.68	559

N	L 0	1	2	3	4	5	6	7	8	9	P P	
200	30 103	125	146	168	190	211	233	255	276	298		
201	320	341	363	384	406	428	449	471	492	514		22
202	535	557	578	600	621	643	664	685	707	728	I	21
203	750	771	792	814	835	856	878	899	920	942	2	2.2
204	963	984	*006	*027	*048	*069	*091	*112	*133	*154	3	2.1
205	31 175	197	218	239	260	281	302	323	345	366	4	4.2
206	387	408	429	450	471	492	513	534	555	576	5	6.3
207	597	618	639	660	681	702	723	744	765	785	6	8.4
208	806	827	848	869	890	911	931	952	973	994	7	8.4
209	32 015	035	056	077	098	118	139	160	181	201	8	10.5
210	222	243	263	284	305	325	346	366	387	408	9	12.6
211	428	449	469	490	510	531	552	572	593	613		20
212	634	654	675	695	715	736	756	777	797	818	I	2.0
213	838	858	879	899	919	940	960	980	*001	*021	2	4.0
214	33 041	062	082	102	122	143	163	183	203	224	3	6.0
215	244	264	284	304	325	345	365	385	405	425	4	8.0
216	445	465	486	506	526	546	566	586	606	626	5	10.0
217	646	666	686	706	726	746	766	786	806	826	6	12.0
218	846	866	885	905	925	945	965	985	*005	*025	7	14.0
219	34 044	064	084	104	124	143	163	183	203	223	8	16.0
220	242	262	282	301	321	341	361	380	400	420	9	18.0
221	439	459	479	498	518	537	557	577	596	616		19
222	635	655	674	694	713	733	753	772	792	811	I	1.9
223	830	850	869	889	908	928	947	967	986	*005	2	3.8
224	35 025	044	064	083	102	122	141	160	180	199	3	5.7
225	218	238	257	276	295	315	334	353	372	392	4	7.6
226	411	430	449	468	488	507	526	545	564	583	5	9.5
227	603	622	641	660	679	698	717	736	755	774	6	11.4
228	793	813	832	851	870	889	908	927	946	965	7	13.3
229	984	*003	*021	*040	*059	*078	*097	*116	*135	*154	8	15.2
230	36 173	192	211	229	248	267	286	305	324	342	9	17.1
231	361	380	399	418	436	455	474	493	511	530		18
232	549	568	586	605	624	642	661	680	698	717	I	1.8
233	736	754	773	791	810	829	847	866	884	903	2	3.6
234	922	940	959	977	996	*014	*033	*051	*070	*088	3	5.4
235	37 107	125	144	162	181	199	218	236	254	273	4	7.2
236	291	310	328	346	365	383	401	420	438	457	5	9.0
237	475	493	511	530	548	566	585	603	621	639	6	10.8
238	658	676	694	712	731	749	767	785	803	822	7	12.6
239	840	858	876	894	912	931	949	967	985	*003	8	14.4
240	38 021	039	057	075	093	112	130	148	166	184	9	16.2
241	202	220	238	256	274	292	310	328	346	364		17
242	382	399	417	435	453	471	489	507	525	543	I	1.7
243	561	578	596	614	632	650	668	686	703	721	2	3.4
244	739	757	775	792	810	828	846	863	881	899	3	5.1
245	917	934	952	970	987	*005	*023	*041	*058	*076	4	6.8
246	39 094	111	129	146	164	182	199	217	235	252	5	8.5
247	270	287	305	322	340	358	375	393	410	428	6	10.2
248	445	463	480	498	515	533	550	568	585	602	7	11.9
249	620	637	655	672	690	707	724	742	759	777	8	13.6
250	794	811	829	846	863	881	898	915	933	950	9	15.3
N	L 0	1	2	3	4	5	6	7	8	9	P P	
1980'	=0° 33'	S	4.68 557	T	4.68 559							
2040	=0° 34'		4.68 557		4.68 559	2280'	=0° 38'	S	4.68 557	T	4.68 559	
2100	=0° 35'		4.68 557		4.68 559	2340	=0° 39'		4.68 557		4.68 559	
2160	=0° 36'		4.68 557		4.68 559	2400	=0° 40'		4.68 557		4.68 559	
2220	=0° 37'		4.68 557		4.68 559	2460	=0° 41'		4.68 556		4.68 559	
			4.68 557		4.68 559	2520	=0° 42'		4.68 556		4.68 559	

N	L 0	1	2	3	4	5	6	7	8	9	P P	
250	39 794	811	829	846	863	881	898	915	933	950		
251	967	985	*002	*019	*037	*054	*071	*088	*106	*123	18	
252	40 140	157	175	192	209	226	243	261	278	295	1	1.8
253	312	329	346	364	381	398	415	432	449	466	2	3.6
254	483	500	518	535	552	569	586	603	620	637	3	5.4
255	654	671	688	705	722	739	756	773	790	807	4	7.2
256	824	841	858	875	892	909	926	943	960	976	5	9.0
257	993	*010	*027	*044	*061	*078	*095	*111	*128	*145	6	10.8
258	41 162	179	196	212	229	246	263	280	296	313	7	12.6
259	330	347	363	380	397	414	430	447	464	481	8	14.4
260	497	514	531	547	564	581	597	614	631	647	9	16.2
261	664	681	697	714	731	747	764	780	797	814	17	
262	830	847	863	880	896	913	929	946	963	979	1	1.7
263	996	*012	*029	*045	*062	*078	*095	*111	*127	*144	2	3.4
264	42 160	177	193	210	226	243	259	275	292	308	3	5.1
265	325	341	357	374	390	406	423	439	455	472	4	6.8
266	488	504	521	537	553	570	586	602	619	635	5	8.5
267	651	667	684	700	716	732	749	765	781	797	6	10.2
268	813	830	846	862	878	894	911	927	943	959	7	11.9
269	975	991	*008	*024	*040	*056	*072	*088	*104	*120	8	13.6
270	43 136	152	169	185	201	217	233	249	265	281	9	15.3
271	297	313	329	345	361	377	393	409	425	441	16	
272	457	473	489	505	521	537	553	569	584	600	1	1.6
273	616	632	648	664	680	696	712	727	743	759	2	3.2
274	775	791	807	823	838	854	870	886	902	917	3	4.8
275	933	949	965	981	996	*012	*028	*044	*059	*075	4	6.4
276	44 091	107	122	138	154	170	185	201	217	232	5	8.0
277	248	264	279	295	311	326	342	358	373	389	6	9.6
278	404	420	436	451	467	483	498	514	529	545	7	11.2
279	560	576	592	607	623	638	654	669	685	700	8	12.8
280	716	731	747	762	778	793	809	824	840	855	9	14.4
281	871	886	902	917	932	948	963	979	994	*010	15	
282	45 025	040	056	071	086	102	117	133	148	163	1	1.5
283	179	194	209	225	240	255	271	286	301	317	2	3.0
284	332	347	362	378	393	408	423	439	454	469	3	4.5
285	484	500	515	530	545	561	576	591	606	621	4	6.0
286	637	652	667	682	697	712	728	743	758	773	5	7.5
287	788	803	818	834	849	864	879	894	909	924	6	9.0
288	939	954	969	984	*000	*015	*030	*045	*060	*075	7	10.5
289	46 090	105	120	135	150	165	180	195	210	225	8	12.0
290	240	255	270	285	300	315	330	345	359	374	9	13.5
291	389	404	419	434	449	464	479	494	509	523	14	
292	538	553	568	583	598	613	627	642	657	672	1	1.4
293	687	702	716	731	746	761	776	790	805	820	2	2.8
294	835	850	864	879	894	909	923	938	953	967	3	4.2
295	982	997	*012	*026	*041	*056	*070	*085	*100	*114	4	5.6
296	47 129	144	159	173	188	202	217	232	246	261	5	7.0
297	276	290	305	319	334	349	363	378	392	407	6	8.4
298	422	436	451	465	480	494	509	524	538	553	7	9.8
299	567	582	596	611	625	640	654	669	683	698	8	11.2
300	712	727	741	756	770	784	799	813	828	842	9	12.6

N	L 0	1	2	3	4	5	6	7	8	9	P P				
2460'	=0° 41'	S	4.68	556	T	4.68	560	2760'	=0° 46'	S	4.68	556	T	4.68	560
2520	=0 42		4.68	556		4.68	560	2820	=0 47		4.68	556		4.68	560
2580	=0 43		4.68	556		4.68	560	2880	=0 48		4.68	556		4.68	560
2640	=0 44		4.68	556		4.68	560	2940	=0 49		4.68	556		4.68	560
2700	=0 45		4.68	556		4.68	560	3000	=0 50		4.68	556		4.68	561

N	L 0	1	2	3	4	5	6	7	8	9	P	P
300	47 712	727	741	756	770	784	799	813	828	842		
301	857	871	885	900	914	929	943	958	972	986		
302	48 001	015	029	044	058	073	087	101	116	130		
303	144	159	173	187	202	216	230	244	259	273		
304	287	302	316	330	344	359	373	387	401	416		
305	430	444	458	473	487	501	515	530	544	558		
306	572	586	601	615	629	643	657	671	686	700		
307	714	728	742	756	770	785	799	813	827	841		
308	855	869	883	897	911	926	940	954	968	982		
309	996	*010	*024	*038	*052	*066	*080	*094	*108	*122		
810	49 136	150	164	178	192	206	220	234	248	262		
311	276	290	304	318	332	346	360	374	388	402		
312	415	429	443	457	471	485	499	513	527	541		
313	554	568	582	596	610	624	638	651	665	679		
314	693	707	721	734	748	762	776	790	803	817		
315	837	851	865	879	893	907	921	935	949	963		
316	969	982	996	*010	*024	*037	*051	*065	*079	*092		
317	50 106	120	133	147	161	174	188	202	215	229		
318	243	256	270	284	297	311	325	338	352	365		
319	379	393	406	420	433	447	461	474	488	501		
320	515	529	542	556	569	583	596	610	623	637		
321	651	664	678	691	705	718	732	745	759	772		
322	786	799	813	826	840	853	866	880	893	907		
323	920	934	947	961	974	987	*001	*014	*028	*041		
324	51 055	068	081	095	108	121	135	148	162	175		
325	188	202	215	228	242	255	268	282	295	308		
326	322	335	348	362	375	388	402	415	428	441		
327	455	468	481	495	508	521	534	548	561	574		
328	587	601	614	627	640	654	667	680	693	706		
329	720	733	746	759	772	786	799	812	825	838		
330	851	865	878	891	904	917	930	943	957	970		
331	983	996	*009	*022	*035	*048	*061	*075	*088	*101		
332	52 114	127	140	153	166	179	192	205	218	231		
333	244	257	270	284	297	310	323	336	349	362		
334	375	388	401	414	427	440	453	466	479	492		
335	504	517	530	543	556	569	582	595	608	621		
336	634	647	660	673	686	699	711	724	737	750		
337	763	776	789	802	815	827	840	853	866	879		
338	892	905	917	930	943	956	969	982	994	*007		
339	53 020	033	046	058	071	084	097	110	122	135		
340	148	161	173	186	199	212	224	237	250	263		
341	275	288	301	314	326	339	352	364	377	390		
342	403	415	428	441	453	466	479	491	504	517		
343	529	542	555	567	580	593	605	618	631	643		
344	656	668	681	694	706	719	732	744	757	769		
345	782	794	807	820	832	845	857	870	882	895		
346	908	920	933	945	958	970	983	995	*008	*020		
347	54 033	045	058	070	083	095	108	120	133	145		
348	158	170	183	195	208	220	233	245	258	270		
349	283	295	307	320	332	345	357	370	382	394		
350	407	419	432	444	456	469	481	494	506	518		

15
1 1.5
2 3.0
3 4.5
4 6.0
5 7.5
6 9.0
7 10.5
8 12.0
9 13.5

14
1 1.4
2 2.8
3 4.2
4 5.6
5 7.0
6 8.4
7 9.8
8 11.2
9 12.6

13
1 1.3
2 2.6
3 3.9
4 5.2
5 6.5
6 7.8
7 9.1
8 10.4
9 11.7

12
1 1.2
2 2.4
3 3.6
4 4.8
5 6.0
6 7.2
7 8.4
8 9.6
9 10.8

N	L 0	1	2	3	4	5	6	7	8	9	P	P
3000	= 0° 50'	S	4.68	556	T	4.68	561	3300	= 0° 55'	S	4.68	556
3060	= 0 51		4.68	556		4.68	561	3360	= 0 56		4.68	556
3120	= 0 52		4.68	556		4.68	561	3420	= 0 57		4.68	555
3180	= 0 53		4.68	556		4.68	561	3480	= 0 58		4.68	555
3240	= 0 54		4.68	556		4.68	561	3540	= 0 59		4.68	555

N	L 0	1	2	3	4	5	6	7	8	9	PP
350	54 407	419	432	444	456	469	481	494	506	518	
351	531	543	555	568	580	593	605	617	630	642	
352	654	667	679	691	704	716	728	741	753	765	
353	777	790	802	814	827	839	851	864	876	888	
354	900	913	925	937	949	962	974	986	998	*011	13
355	55 023	035	047	060	072	084	096	108	121	133	1 1.3
356	145	157	169	182	194	206	218	230	242	255	2 2.6
357	267	279	291	303	315	328	340	352	364	376	3 3.9
358	388	400	413	425	437	449	461	473	485	497	4 5.2
359	509	522	534	546	558	570	582	594	606	618	5 6.5
360	630	642	654	666	678	691	703	715	727	739	6 7.8
361	751	763	775	787	799	811	823	835	847	859	7 9.1
362	871	883	895	907	919	931	943	955	967	979	8 10.4
363	991	*003	*015	*027	*038	*050	*062	*074	*086	*098	9 11.7
364	56 110	122	134	146	158	170	182	194	205	217	
365	229	241	253	265	277	289	301	312	324	336	
366	348	360	372	384	396	407	419	431	443	455	12
367	467	478	490	502	514	526	538	549	561	573	1 1.2
368	585	597	608	620	632	644	656	667	679	691	2 2.4
369	703	714	726	738	750	761	773	785	797	808	3 3.6
370	820	832	844	855	867	879	891	902	914	926	4 4.8
371	937	949	961	972	984	996	*008	*019	*031	*043	5 6.0
372	57 054	066	078	089	101	113	124	136	148	159	6 7.2
373	171	183	194	206	217	229	241	252	264	276	7 8.4
374	287	299	310	322	334	345	357	368	380	392	8 9.6
375	403	415	426	438	449	461	473	484	496	507	9 10.8
376	519	530	542	553	565	576	588	600	611	623	
377	634	646	657	669	680	692	703	715	726	738	
378	749	761	772	784	795	807	818	830	841	852	11
379	864	875	887	898	910	921	933	944	955	967	1 1.1
380	978	990	*001	*013	*024	*035	*047	*058	*070	*081	2 2.2
381	58 092	104	115	127	138	149	161	172	184	195	3 3.3
382	206	218	229	240	252	263	274	286	297	309	4 4.4
383	320	331	343	354	365	377	388	399	410	422	5 5.5
384	433	444	456	467	478	490	501	512	524	535	6 6.6
385	546	557	569	580	591	602	614	625	636	647	7 7.7
386	659	670	681	692	704	715	726	737	749	760	8 8.8
387	771	782	794	805	816	827	838	850	861	872	9 9.9
388	883	894	906	917	928	939	950	961	973	984	
389	995	*006	*017	*028	*040	*051	*062	*073	*084	*095	10
390	59 106	118	129	140	151	162	173	184	195	207	1 1.0
391	218	229	240	251	262	273	284	295	306	318	2 2.0
392	329	340	351	362	373	384	395	406	417	428	3 3.0
393	439	450	461	472	483	494	506	517	528	539	4 4.0
394	550	561	572	583	594	605	616	627	638	649	5 5.0
395	660	671	682	693	704	715	726	737	748	759	6 6.0
396	770	780	791	802	813	824	835	846	857	868	7 7.0
397	879	890	901	912	923	934	945	956	966	977	8 8.0
398	988	999	*010	*021	*032	*043	*054	*065	*076	*086	9 9.0
399	60 097	108	119	130	141	152	163	173	184	195	
400	206	217	228	239	249	260	271	282	293	304	

N	L 0	1	2	3	4	5	6	7	8	9	PP
380°	=0° 58	S	4.68 555	T	4.68 562	3780°	=1° 3	S	4.68 555	T	4.68 562
3840	=0 59		4.68 555		4.68 562	3840	=1 4		4.68 555		4.68 563
3900	=1 0		4.68 555		4.68 562	3900	=1 5		4.68 555		4.68 563
3960	=1 1		4.68 555		4.68 562	3960	=1 6		4.68 555		4.68 563
3720	=1 2		4.68 555		4.68 562	4020	=1 7		4.68 555		4.68 563

N	L 0	1	2	3	4	5	6	7	8	9	P P	
450	65 321	331	341	350	360	369	379	389	398	408		
451	418	427	437	447	456	466	475	485	495	504		
452	514	523	533	543	552	562	571	581	591	600		
453	610	619	629	639	648	658	667	677	686	696		
454	706	715	725	734	744	753	763	772	782	792		
455	801	811	820	830	839	849	858	868	877	887		
456	896	906	916	925	935	944	954	963	973	982		
457	992	*001	*011	*020	*030	*039	*049	*058	*068	*077	10	
458	66 087	096	106	115	124	134	143	153	162	172	1	1.0
459	181	191	200	210	219	229	238	247	257	266	2	2.0
460	276	285	295	304	314	323	332	342	351	361	3	3.0
461	370	380	389	398	408	417	427	436	445	455	4	4.0
462	464	474	483	492	502	511	521	530	539	549	5	5.0
463	558	567	577	586	596	605	614	624	633	642	6	6.0
464	652	661	671	680	689	699	708	717	727	736	7	7.0
465	745	755	764	773	783	792	801	811	820	829	8	8.0
466	839	848	857	867	876	885	894	904	913	922	9	9.0
467	932	941	950	960	969	978	987	997	*006	*015		
468	67 025	034	043	052	062	071	080	089	099	108		
469	117	127	136	145	154	164	173	182	191	201		
470	210	219	228	237	247	256	265	274	284	293		
471	302	311	321	330	339	348	357	367	376	385	9	
472	394	403	413	422	431	440	449	459	468	477	1	0.9
473	486	495	504	514	523	532	541	550	560	569	2	1.8
474	578	587	596	605	614	624	633	642	651	660	3	2.7
475	669	679	688	697	706	715	724	733	742	752	4	3.6
476	761	770	779	788	797	806	815	825	834	843	5	4.5
477	852	861	870	879	888	897	906	916	925	934	6	5.4
478	943	952	961	970	979	988	997	*006	*015	*024	7	6.3
479	68 034	043	052	061	070	079	088	097	106	115	8	7.2
480	124	133	142	151	160	169	178	187	196	205	9	8.1
481	215	224	233	242	251	260	269	278	287	296		
482	305	314	323	332	341	350	359	368	377	386		
483	395	404	413	422	431	440	449	458	467	476		
484	485	494	502	511	520	529	538	547	556	565		
485	574	583	592	601	610	619	628	637	646	655	8	
486	664	673	681	690	699	708	717	726	735	744	1	0.8
487	753	762	771	780	789	797	806	815	824	833	2	1.6
488	842	851	860	869	878	886	895	904	913	922	3	2.4
489	931	940	949	958	966	975	984	993	*002	*011	4	3.2
490	69 020	028	037	046	055	064	073	082	090	099	5	4.0
491	108	117	126	135	144	152	161	170	179	188	6	4.8
492	197	205	214	223	232	241	249	258	267	276	7	5.6
493	285	294	302	311	320	329	338	346	355	364	8	6.4
494	373	381	390	399	408	417	425	434	443	452	9	7.2
495	461	469	478	487	496	504	513	522	531	539		
496	548	557	566	574	583	592	601	609	618	627		
497	636	644	653	662	671	679	688	697	705	714		
498	723	732	740	749	758	767	775	784	793	801		
499	810	819	827	836	845	854	862	871	880	888		
500	897	906	914	923	932	940	949	958	966	975		

N	L 0	1	2	3	4	5	6	7	8	9	P P	
4500'	=1° 15'	S	4.68 554	T	4.68 564	4800'	=1° 20'	S	4.68 554	T	4.68 565	
4560	=1 16		4.68 554		4.68 565	4860	=1 21		4.68 553		4.68 566	
4620	=1 17		4.68 554		4.68 565	4920	=1 22		4.68 553		4.68 566	
4680	=1 18		4.68 554		4.68 565	4980	=1 23		4.68 553		4.68 566	
4740	=1 19		4.68 554		4.68 565	5040	=1 24		4.68 553		4.68 566	

N	L 0	1	2	3	4	5	6	7	8	9	P P	
500	69 897	906	914	923	932	940	949	958	966	975		
501	984	992	*001	*010	*018	*027	*036	*044	*053	*062		
502	70 070	079	088	096	105	114	122	131	140	148		
503	157	165	174	183	191	200	209	217	226	234		
504	243	252	260	269	278	286	295	303	312	321		
505	329	338	346	355	364	372	381	389	398	406		
506	415	424	432	441	449	458	467	475	484	492		
507	501	509	518	526	535	544	552	561	569	578		
508	586	595	603	612	621	629	638	646	655	663		
509	672	680	689	697	706	714	723	731	740	749		
510	757	766	774	783	791	800	808	817	825	834		
511	842	851	859	868	876	885	893	902	910	919		
512	927	935	944	952	961	969	978	986	995	*003		
513	71 012	020	029	037	046	054	063	071	079	088		
514	096	105	113	122	130	139	147	155	164	172		
515	181	189	198	206	214	223	231	240	248	257		
516	265	273	282	290	299	307	315	324	332	341		
517	349	357	366	374	383	391	399	408	416	425		
518	433	441	450	458	466	475	483	492	500	508		
519	517	525	533	542	550	559	567	575	584	592		
520	600	609	617	625	634	642	650	659	667	675		
521	684	692	700	709	717	725	734	742	750	759		
522	767	775	784	792	800	809	817	825	834	842		
523	850	858	867	875	883	892	900	908	917	925		
524	933	941	950	958	966	975	983	991	999	*008		
525	72 016	024	032	041	049	057	066	074	082	090		
526	099	107	115	123	132	140	148	156	165	173		
527	181	189	198	206	214	222	230	239	247	255		
528	263	272	280	288	296	304	313	321	329	337		
529	346	354	362	370	378	387	395	403	411	419		
530	428	436	444	452	460	469	477	485	493	501		
531	509	518	526	534	542	550	558	567	575	583		
532	591	599	607	616	624	632	640	648	656	665		
533	673	681	689	697	705	713	722	730	738	746		
534	754	762	770	779	787	795	803	811	819	827		
535	835	843	852	860	868	876	884	892	900	908		
536	916	925	933	941	949	957	965	973	981	989		
537	997	*006	*014	*022	*030	*038	*046	*054	*062	*070		
538	73 078	086	094	102	111	119	127	135	143	151		
539	159	167	175	183	191	199	207	215	223	231		
540	239	247	255	263	272	280	288	296	304	312		
541	320	328	336	344	352	360	368	376	384	392		
542	400	408	416	424	432	440	448	456	464	472		
543	480	488	496	504	512	520	528	536	544	552		
544	560	568	576	584	592	600	608	616	624	632		
545	640	648	656	664	672	679	687	695	703	711		
546	719	727	735	743	751	759	767	775	783	791		
547	799	807	815	823	830	838	846	854	862	870		
548	878	886	894	902	910	918	926	933	941	949		
549	957	965	973	981	989	997	*005	*013	*020	*028		
550	74 036	044	052	060	068	076	084	092	099	107		
N	L 0	1	2	3	4	5	6	7	8	9	P P	
4980° = 1° 23'	S	4.68 553	T	4.68 566	5280° = 1° 28'	S	4.68 553	T	4.68 567	4.68 567		
5040 = 1 24		4.68 553		4.68 566	5340 = 1 29		4.68 553		4.68 567	4.68 567		
5100 = 1 25		4.68 553		4.68 566	5400 = 1 30		4.68 553		4.68 567	4.68 567		
5160 = 1 26		4.68 553		4.68 566	5460 = 1 31		4.68 552		4.68 567	4.68 567		
5220 = 1 27		4.68 553		4.68 567	5520 = 1 32		4.68 552		4.68 567	4.68 567		

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N	L 0	1	2	3	4	5	6	7	8	9	P P	
550	74 036	044	052	060	068	076	084	092	099	107		
551	115	123	131	139	147	155	162	170	178	186		
552	194	202	210	218	225	233	241	249	257	265		
553	273	280	288	296	304	312	320	327	335	343		
554	351	359	367	374	382	390	398	406	414	421		
555	429	437	445	453	461	468	476	484	492	500		
556	507	515	523	531	539	547	554	562	570	578		
557	586	593	601	609	617	624	632	640	648	656		
558	663	671	679	687	695	702	710	718	726	733		
559	741	749	757	764	772	780	788	796	803	811		
560	819	827	834	842	850	858	865	873	881	889		
561	896	904	912	920	927	935	943	950	958	966		8
562	974	981	989	997	*005	*012	*020	*028	*035	*043		
563	75 051	059	066	074	082	089	097	105	113	120	1	0.8
564	128	136	143	151	159	166	174	182	189	197	2	1.6
565	205	213	220	228	236	243	251	259	266	274	3	2.4
566	282	289	297	305	312	320	328	335	343	351	4	3.2
567	358	366	374	381	389	397	404	412	420	427	5	4.0
568	435	442	450	458	465	473	481	488	496	504	6	4.8
569	511	519	526	534	542	549	557	565	572	580	7	5.6
570	587	595	603	610	618	626	633	641	648	656	8	6.4
571	664	671	679	686	694	702	709	717	724	732	9	7.2
572	740	747	755	762	770	778	785	793	800	808		
573	815	823	831	838	846	853	861	868	876	884		
574	891	899	906	914	921	929	937	944	952	959		
575	967	974	982	989	997	*005	*012	*020	*027	*035		
576	76 042	050	057	065	072	080	087	095	103	110		
577	118	125	133	140	148	155	163	170	178	185		
578	193	200	208	215	223	230	238	245	253	260		
579	268	275	283	290	298	305	313	320	328	335		
580	343	350	358	365	373	380	388	395	403	410		7
581	418	425	433	440	448	455	462	470	477	485	1	0.7
582	492	500	507	515	522	530	537	545	552	559	2	1.4
583	567	574	582	589	597	604	612	619	626	634	3	2.1
584	641	649	656	664	671	678	686	693	701	708	4	2.8
585	716	723	730	738	745	753	760	768	775	782	5	3.5
586	790	797	805	812	819	827	834	842	849	856	6	4.2
587	864	871	879	886	893	901	908	916	923	930	7	4.9
588	938	945	953	960	967	975	982	989	997	*004	8	5.6
589	77 012	019	026	034	041	048	056	063	070	078	9	6.3
590	085	093	100	107	115	122	129	137	144	151		
591	159	166	173	181	188	195	203	210	217	225		
592	232	240	247	254	262	269	276	283	291	298		
593	305	313	320	327	335	342	349	357	364	371		
594	379	386	393	401	408	415	422	430	437	444		
595	452	459	466	474	481	488	495	503	510	517		
596	525	532	539	546	554	561	568	576	583	590		
597	597	605	612	619	627	634	641	648	656	663		
598	670	677	685	692	699	706	714	721	728	735		
599	743	750	757	764	772	779	786	793	801	808		
600	815	822	830	837	844	851	859	866	873	880		

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N	L 0	1	2	3	4	5	6	7	8	9	P P				
5460	=1° 31'	S	4.68	552	T	4.68	568	5760	=1° 36'	S	4.68	552	T	4.68	569
5520	=1	32	4.68	552		4.68	568	5820	=1	37	4.68	552		4.68	569
5580	=1	33	4.68	552		4.68	568	5880	=1	38	4.68	552		4.68	569
5640	=1	34	4.68	552		4.68	568	5940	=1	39	4.68	551		4.68	569
5700	=	35	4.68	552		4.68	569	6000	=1	40	4.68	551		4.68	570

N	L 0	1	2	3	4	5	6	7	8	9	P	P
600	77 815	822	830	837	844	851	859	866	873	880		
601	887	895	902	909	916	924	931	938	945	952		
602	960	967	974	981	988	996	*003	*010	*017	*025		
603	78 032	039	046	053	061	068	075	082	089	097		
604	104	111	118	125	132	140	147	154	161	168		
605	176	183	190	197	204	211	219	226	233	240		
606	247	254	262	269	276	283	290	297	305	312		
607	319	326	333	340	347	355	362	369	376	383		
608	390	398	405	412	419	426	433	440	447	455		
609	462	469	476	483	490	497	504	512	519	526		
610	533	540	547	554	561	569	576	583	590	597		
611	604	611	618	625	633	640	647	654	661	668		
612	675	682	689	696	704	711	718	725	732	739		
613	746	753	760	767	774	781	789	796	803	810		
614	817	824	831	838	845	852	859	866	873	880		
615	888	895	902	909	916	923	930	937	944	951		
616	958	965	972	979	986	993	*000	*007	*014	*021		
617	79 029	036	043	050	057	064	071	078	085	092		
618	099	106	113	120	127	134	141	148	155	162		
619	169	176	183	190	197	204	211	218	225	232		
620	239	246	253	260	267	274	281	288	295	302		
621	309	316	323	330	337	344	351	358	365	372		
622	379	386	393	400	407	414	421	428	435	442		
623	449	456	463	470	477	484	491	498	505	511		
624	518	525	532	539	546	553	560	567	574	581		
625	588	595	602	609	616	623	630	637	644	650		
626	657	664	671	678	685	692	699	706	713	720		
627	727	734	741	748	754	761	768	775	782	789		
628	796	803	810	817	824	831	837	844	851	858		
629	865	872	879	886	893	900	906	913	920	927		
630	934	941	948	955	962	969	975	982	989	996		
631	80 003	010	017	024	030	037	044	051	058	065		
632	072	079	085	092	099	106	113	120	127	134		
633	140	147	154	161	168	175	182	188	195	202		
634	209	216	223	229	236	243	250	257	264	271		
635	277	284	291	298	305	312	318	325	332	339		
636	346	353	359	366	373	380	387	393	400	407		
637	414	421	428	434	441	448	455	462	468	475		
638	482	489	496	502	509	516	523	530	536	543		
639	550	557	564	570	577	584	591	598	604	611		
640	618	625	632	638	645	652	659	665	672	679		
641	686	693	699	706	713	720	726	733	740	747		
642	754	760	767	774	781	787	794	801	808	814		
643	821	828	835	841	848	855	862	868	875	882		
644	889	895	902	909	916	922	929	936	943	949		
645	956	963	969	976	983	990	996	*003	*010	*017		
646	81 023	030	037	043	050	057	064	070	077	084		
647	090	097	104	111	117	124	131	137	144	151		
648	158	164	171	178	184	191	198	204	211	218		
649	224	231	238	245	251	258	265	271	278	285		
650	291	298	305	311	318	325	331	338	345	351		

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N	L 0	1	2	3	4	5	6	7	8	9	P	P
6000	= 1° 40											
6060	= 1 41	S 4.68	551	T 4.68	570							
6120	= 1 42	4.68	551	4.68	570							
6180	= 1 43	4.68	551	4.68	570							
6240	= 1 44	4.68	551	4.68	570							
		4.68	551	4.68	571							
6300	= 1° 45	S 4.68	551	T 4.68	571							
6360	= 1 46	4.68	551	4.68	571							
6420	= 1 47	4.68	550	4.68	571							
6480	= 1 48	4.68	550	4.68	571							
		4.68	550	4.68	571							

N	L 0	1	2	3	4	5	6	7	8	9	P P	
650	81 291	298	305	311	318	325	331	338	345	351		
651	358	365	371	378	385	391	398	405	411	418		
652	425	431	438	445	451	458	465	471	478	485		
653	491	498	505	511	518	525	531	538	544	551		
654	558	564	571	578	584	591	598	604	611	617		
655	624	631	637	644	651	657	664	671	677	684		
656	690	697	704	710	717	723	730	737	743	750		
657	757	763	770	776	783	790	796	803	809	816		
658	823	829	836	842	849	856	862	869	875	882		
659	889	895	902	908	915	921	928	935	941	948		
660	954	961	968	974	981	987	994	*000	*007	*014		
661	82 020	027	033	040	046	053	060	066	073	079		
662	086	092	099	105	112	119	125	132	138	145		7
663	151	158	164	171	178	184	191	197	204	210	1	0.7
664	217	223	230	236	243	249	256	263	269	276	2	1.4
665	282	289	295	302	308	315	321	328	334	341	3	2.1
666	347	354	360	367	373	380	387	393	400	406	4	2.8
667	413	419	426	432	439	445	452	458	465	471	5	3.5
668	478	484	491	497	504	510	517	523	530	536	6	4.2
669	543	549	556	562	569	575	582	588	595	601	7	4.9
670	607	614	620	627	633	640	646	653	659	666	8	5.6
671	672	679	685	692	698	705	711	718	724	730	9	6.3
672	737	743	750	756	763	769	776	782	789	795		
673	802	808	814	821	827	834	840	847	853	860		
674	866	872	879	885	892	898	905	911	918	924		
675	930	937	943	950	956	963	969	975	982	988		
676	995	*001	*008	*014	*020	*027	*033	*040	*046	*052		
677	83 059	065	072	078	085	091	097	104	110	117		
678	123	129	136	142	149	155	161	168	174	181		
679	187	193	200	206	213	219	225	232	238	245		
680	251	257	264	270	276	283	289	296	302	308		
681	315	321	327	334	340	347	353	359	366	372		6
682	378	385	391	398	404	410	417	423	429	436	1	0.6
683	442	448	455	461	467	474	480	487	493	499	2	1.2
684	506	512	518	525	531	537	544	550	556	563	3	1.8
685	569	575	582	588	594	601	607	613	620	626	4	2.4
686	632	639	645	651	658	664	670	677	683	689	5	3.0
687	696	702	708	715	721	727	734	740	746	753	6	3.6
688	759	765	771	778	784	790	797	803	809	816	7	4.2
689	822	828	835	841	847	853	860	866	872	879	8	4.8
690	885	891	897	904	910	916	923	929	935	942	9	5.4
691	948	954	960	967	973	979	985	992	998	*004		
692	84 011	017	023	029	036	042	048	055	061	067		
693	073	080	086	092	098	105	111	117	123	130		
694	136	142	148	155	161	167	173	180	186	192		
695	198	205	211	217	223	230	236	242	248	255		
696	261	267	273	280	286	292	298	305	311	317		
697	323	330	336	342	348	354	361	367	373	379		
698	386	392	398	404	410	417	423	429	435	442		
699	448	454	460	466	473	479	485	491	497	504		
700	510	516	522	528	535	541	547	553	559	566		
N	L 0	1	2	3	4	5	6	7	8	9	P P	

6480' = 1° 48' S	4.68 550	T	4.68 572	6780' = 1° 53' S	4.68 550	T	4.68 573
6540' = 1 49	4.68 550		4.68 572	6840' = 1 54	4.68 550		4.68 573
6600' = 1 50	4.68 550		4.68 572	6900' = 1 55	4.68 549		4.68 574
6660' = 1 51	4.68 550		4.68 573	6960' = 1 56	4.68 549		4.68 574
6720' = 1 52	4.68 550		4.68 573	7020' = 1 57	4.68 549		4.68 574

N	L 0	1	2	3	4	5	6	7	8	9	P P
700	84 510	516	522	528	535	541	547	553	559	566	
701	572	578	584	590	597	603	609	615	621	628	
702	634	640	646	652	658	665	671	677	683	689	
703	696	702	708	714	720	726	733	739	745	751	
704	757	763	770	776	782	788	794	800	807	813	
705	819	825	831	837	844	850	856	862	868	874	
706	880	887	893	899	905	911	917	924	930	936	
707	942	948	954	960	967	973	979	985	991	997	
708	85 003	009	016	022	028	034	040	046	052	058	
709	065	071	077	083	089	095	101	107	114	120	
710	126	132	138	144	150	156	163	169	175	181	
711	187	193	199	205	211	217	224	230	236	242	
712	248	254	260	266	272	278	285	291	297	303	
713	309	315	321	327	333	339	345	352	358	364	
714	370	376	382	388	394	400	406	412	418	425	
715	431	437	443	449	455	461	467	473	479	485	
716	491	497	503	509	516	522	528	534	540	546	
717	552	558	564	570	576	582	588	594	600	606	
718	612	618	625	631	637	643	649	655	661	667	
719	673	679	685	691	697	703	709	715	721	727	
720	733	739	745	751	757	763	769	775	781	788	
721	794	800	806	812	818	824	830	836	842	848	
722	854	860	866	872	878	884	890	896	902	908	
723	914	920	926	932	938	944	950	956	962	968	
724	974	980	986	992	998	*004	*010	*016	*022	*028	
725	86 034	040	046	052	058	064	070	076	082	088	
726	094	100	106	112	118	124	130	136	141	147	
727	153	159	165	171	177	183	189	195	201	207	
728	213	219	225	231	237	243	249	255	261	267	
729	273	279	285	291	297	303	308	314	320	326	
730	332	338	344	350	356	362	368	374	380	386	
731	392	398	404	410	415	421	427	433	439	445	
732	451	457	463	469	475	481	487	493	499	504	
733	510	516	522	528	534	540	546	552	558	564	
734	570	576	581	587	593	599	605	611	617	623	
735	629	635	641	646	652	658	664	670	676	682	
736	688	694	700	705	711	717	723	729	735	741	
737	747	753	759	764	770	776	782	788	794	800	
738	806	812	817	823	829	835	841	847	853	859	
739	864	870	876	882	888	894	900	906	911	917	
740	923	929	935	941	947	953	958	964	970	976	
741	982	988	994	999	*005	*011	*017	*023	*029	*035	
742	87 040	046	052	058	064	070	075	081	087	093	
743	099	105	111	116	122	128	134	140	146	151	
744	157	163	169	175	181	186	192	198	204	210	
745	216	221	227	233	239	245	251	256	262	268	
746	274	280	286	291	297	303	309	315	320	326	
747	332	338	344	349	355	361	367	373	379	384	
748	390	396	402	408	413	419	425	431	437	442	
749	448	454	460	466	471	477	483	489	495	500	
750	506	512	518	523	529	535	541	547	552	558	

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N	L 0	1	2	3	4	5	6	7	8	9	P P
6960'	= 1° 56'	8									
7020	= 1	57	4.68 549	T	4.68 574						4.68 575
7080	= 1	58	4.68 549		4.68 574		7260' = 2° 1'	S	4.68 549	T	4.68 570
7140	= 1	59	4.68 549		4.68 575		7320	= 2	2		4.68 548
7200	= 2	0	4.68 549		4.68 575		7380	= 2	3		4.68 548
			4.68 549		4.68 575		7440	= 2	4		4.68 548
					4.68 575		7500	= 2	5		4.68 548

N	L 0	1	2	3	4	5	6	7	8	9	P P	
750	87 506	512	518	523	529	535	541	547	552	558		
751	564	570	576	581	587	593	599	604	610	616		
752	622	628	633	639	645	651	656	662	668	674		
753	679	685	691	697	703	708	714	720	726	731		
754	737	743	749	754	760	766	772	777	783	789		
755	795	800	806	812	818	823	829	835	841	846		
756	852	858	864	869	875	881	887	892	898	904		
757	910	915	921	927	933	938	944	950	955	961		
758	967	973	978	984	990	996	*001	*007	*013	*018		
759	88 024	030	036	041	047	053	058	064	070	076		
760	081	087	093	098	104	110	116	121	127	133		
761	138	144	150	156	161	167	173	178	184	190		
762	195	201	207	213	218	224	230	235	241	247		
763	252	258	264	270	275	281	287	292	298	304		
764	309	315	321	326	332	338	343	349	355	360		
765	366	372	377	383	389	395	400	406	412	417		
766	423	429	434	440	446	451	457	463	468	474		
767	480	485	491	497	502	508	513	519	525	530		
768	536	542	547	553	559	564	570	576	581	587		
769	593	598	604	610	615	621	627	632	638	643		
770	649	655	660	666	672	677	683	689	694	700		
771	705	711	717	722	728	734	739	745	750	756		
772	762	767	773	779	784	790	795	801	807	812		
773	818	824	829	835	840	846	852	857	863	868		
774	874	880	885	891	897	902	908	913	919	925		
775	930	936	941	947	953	958	964	969	975	981		
776	986	992	997	*003	*009	*014	*020	*025	*031	*037		
777	89 042	048	053	059	064	070	076	081	087	092		
778	098	104	109	115	120	126	131	137	143	148		
779	154	159	165	170	176	182	187	193	198	204		
780	209	215	221	226	232	237	243	248	254	260		
781	265	271	276	282	287	293	298	304	310	315		
782	321	326	332	337	343	348	354	360	365	371		
783	376	382	387	393	398	404	409	415	421	426		
784	432	437	443	448	454	459	465	470	476	481		
785	487	492	498	504	509	515	520	526	531	537		
786	542	548	553	559	564	570	575	581	586	592		
787	597	603	609	614	620	625	631	636	642	647		
788	653	658	664	669	675	680	686	691	697	702		
789	708	713	719	724	730	735	741	746	752	757		
790	763	768	774	779	785	790	796	801	807	812		
791	818	823	829	834	840	845	851	856	862	867		
792	873	878	883	889	894	900	905	911	916	922		
793	927	933	938	944	949	955	960	966	971	977		
794	982	988	993	998	*004	*009	*015	*020	*026	*031		
795	90 037	042	048	053	059	064	069	075	080	086		
796	091	097	102	108	113	119	124	129	135	140		
797	146	151	157	162	168	173	179	184	189	195		
798	200	206	211	217	222	227	233	238	244	249		
799	255	260	266	271	276	282	287	293	298	304		
800	309	314	320	325	331	336	342	347	352	358		

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8	4.0
9	4.5

N	L 0	1	2	3	4	5	6	7	8	9	P P	
7500'	= 2° 5'	S	4.68 548	T	4.68 577	7800'	= 2° 10'	S	4.68 547	T	4.68 578	
7560	= 2 6		4.68 548		4.68 577	7860	= 2 11		4.68 547		4.68 579	
7620	= 2 7		4.68 548		4.68 577	7920	= 2 12		4.68 547		4.68 579	
7680	= 2 8		4.68 547		4.68 578	7980	= 2 13		4.68 547		4.68 579	
7740	= 2 9		4.68 547		4.68 578	8040	= 2 14		4.68 546		4.68 579	

N	L 0	1	2	3	4	5	6	7	8	9	P P	
800	90 309	314	320	325	331	336	342	347	352	358		
801	363	369	374	380	385	390	396	401	407	412		
802	417	423	428	434	439	445	450	455	461	466		
803	472	477	482	488	493	499	504	509	515	520		
804	526	531	536	542	547	553	558	563	569	574		
805	580	585	590	596	601	607	612	617	623	628		
806	634	639	644	650	655	660	666	671	677	682		
807	687	693	698	703	709	714	720	725	730	736		
808	741	747	752	757	763	768	773	779	784	789		
809	795	800	806	811	816	822	827	832	838	843		
810	849	854	859	865	870	875	881	886	891	897		
811	902	907	913	918	924	929	934	940	945	950		
812	956	961	966	972	977	982	988	993	998	*004		6
813	91 009	014	020	025	030	036	041	046	052	057	I	0.6
814	062	068	073	078	084	089	094	100	105	110	2	1.2
815	116	121	126	132	137	142	148	153	158	164	3	1.8
816	169	174	180	185	190	196	201	206	212	217	4	2.4
817	222	228	233	238	243	249	254	259	265	270	5	3.0
818	275	281	286	291	297	302	307	312	318	323	6	3.6
819	328	334	339	344	350	355	360	365	371	376	7	4.2
820	381	387	392	397	403	408	413	418	424	429	8	4.8
821	434	440	445	450	455	461	466	471	477	482	9	5.4
822	487	492	498	503	508	514	519	524	529	535		
823	540	545	551	556	561	566	572	577	582	587		
824	593	598	603	609	614	619	624	630	635	640		
825	645	651	656	661	666	672	677	682	687	693		
826	698	703	709	714	719	724	730	735	740	745		
827	751	756	761	766	772	777	782	787	793	798		
828	803	808	814	819	824	829	834	840	845	850		
829	855	861	866	871	876	882	887	892	897	903		
830	908	913	918	924	929	934	939	944	950	955		
831	960	965	971	976	981	986	991	997	*002	*007		5
832	92 012	018	023	028	033	038	044	049	054	059	I	0.5
833	065	070	075	080	085	091	096	101	106	111	2	1.0
834	117	122	127	132	137	143	148	153	158	163	3	1.5
835	169	174	179	184	189	195	200	205	210	215	4	2.0
836	221	226	231	236	241	247	252	257	262	267	5	2.5
837	273	278	283	288	293	298	304	309	314	319	6	3.0
838	324	330	335	340	345	350	355	361	366	371	7	3.5
839	376	381	387	392	397	402	407	412	418	423	8	4.0
840	428	433	438	443	449	454	459	464	469	474	9	4.5
841	480	485	490	495	500	505	511	516	521	526		
842	531	536	542	547	552	557	562	567	572	578		
843	583	588	593	598	603	609	614	619	624	629		
844	634	639	645	650	655	660	665	670	675	681		
845	686	691	696	701	706	711	716	722	727	732		
846	737	742	747	752	758	763	768	773	778	783		
847	788	793	799	804	809	814	819	824	829	834		
848	840	845	850	855	860	865	870	875	881	886		
849	891	896	901	906	911	916	921	927	932	937		
850	942	947	952	957	962	967	973	978	983	988		

N	L 0	1	2	3	4	5	6	7	8	9	P P				
7980"	=2° 13'	S	4.68	547	T	4.68	579	8280"	=2° 18'	S	4.68	546	T	4.68	581
8040	=2 14		4.68	546		4.68	579	8340	=2 19		4.68	546		4.68	581
8100	=2 15		4.68	546		4.68	580	8400	=2 20		4.68	545		4.68	582
8160	=2 16		4.68	546		4.68	580	8460	=2 21		4.68	545		4.68	582
8220	=2 17		4.68	546		4.68	580	8520	=2 22		4.68	545		4.68	582

N	L 0	1	2	3	4	5	6	7	8	9
900	95 424	429	434	439	444	448	453	458	463	468
901	472	477	482	487	492	497	501	506	511	516
902	521	525	530	535	540	545	550	554	559	564
903	569	574	578	583	588	593	598	602	607	612
904	617	622	626	631	636	641	646	650	655	660
905	665	670	674	679	684	689	694	698	703	708
906	713	718	722	727	732	737	742	746	751	756
907	761	766	770	775	780	785	789	794	799	804
908	809	813	818	823	828	832	837	842	847	852
909	856	861	866	871	875	880	885	890	895	899
910	904	909	914	918	923	928	933	938	942	947
911	952	957	961	966	971	976	980	985	990	995
912	999	*004	*009	*014	*019	*023	*028	*033	*038	*042
913	96 047	052	057	061	066	071	076	080	085	090
914	095	099	104	109	114	118	123	128	133	137
915	142	147	152	156	161	166	171	175	180	185
916	190	194	199	204	209	213	218	223	227	232
917	237	242	246	251	256	261	265	270	275	280
918	284	289	294	298	303	308	313	317	322	327
919	332	336	341	346	350	355	360	365	369	374
920	379	384	388	393	398	402	407	412	417	421
921	426	431	435	440	445	450	454	459	464	468
922	473	478	483	487	492	497	501	506	511	515
923	520	525	530	534	539	544	548	553	558	562
924	567	572	577	581	586	591	595	600	605	609
925	614	619	624	628	633	638	642	647	652	656
926	661	666	670	675	680	685	689	694	699	703
927	708	713	717	722	727	731	736	741	745	750
928	755	759	764	769	774	778	783	788	792	797
929	802	806	811	816	820	825	830	834	839	844
930	848	853	858	862	867	872	876	881	886	890
931	895	900	904	909	914	918	923	928	932	937
932	942	946	951	956	960	965	970	974	979	984
933	988	993	997	*002	*007	*011	*016	*021	*025	*030
934	97 035	039	044	049	053	058	063	067	072	077
935	081	086	090	095	100	104	109	114	118	123
936	128	132	137	142	146	151	155	160	165	169
937	174	179	183	188	192	197	202	206	211	216
938	220	225	230	234	239	243	248	253	257	262
939	267	271	276	280	285	290	294	299	304	308
940	313	317	322	327	331	336	340	345	350	354
941	359	364	368	373	377	382	387	391	396	400
942	405	410	414	419	424	428	433	437	442	447
943	451	456	460	465	470	474	479	483	488	493
944	497	502	506	511	516	520	525	529	534	539
945	543	548	552	557	562	566	571	575	580	585
946	589	594	598	603	607	612	617	621	626	630
947	635	640	644	649	653	658	663	667	672	676
948	681	685	690	695	699	704	708	713	717	722
949	727	731	736	740	745	749	754	759	763	768
950	772	777	782	786	791	795	800	804	809	813

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4	1.6
5	2.0
6	2.4
7	2.8
8	3.2
9	3.6

N	L 0	1	2	3	4	5	6	7	8	9	P P
9000	=2° 30'	S	4.68 544	T	4.68 585	9300	=2° 35'	S	4.68 543	T	4.68 587
9060	=2 31		4.68 544		4.68 585	9360	=2 36		4.68 543		4.68 587
9120	=2 32		4.68 543		4.68 586	9420	=2 37		4.68 542		4.68 588
9180	=2 33		4.68 543		4.68 586	9480	=2 38		4.68 542		4.68 588
9240	=2 34		4.68 543		4.68 587	9540	=2 39		4.68 542		4.68 588

N	L 0	1	2	3	4	5	6	7	8	9	P P	
950	97 772	777	782	786	791	795	800	804	809	813		
951	818	823	827	832	836	841	845	850	855	859		
952	864	868	873	877	882	886	891	896	900	905		
953	909	914	918	923	928	932	937	941	946	950		
954	955	959	964	968	973	978	982	987	991	996		
955	98 000	005	009	014	019	023	028	032	037	041		
956	046	050	055	059	064	068	073	078	082	087		
957	091	096	100	105	109	114	118	123	127	132		
958	137	141	146	150	155	159	164	168	173	177		
959	182	186	191	195	200	204	209	214	218	223		
960	227	232	236	241	245	250	254	259	263	268		
961	272	277	281	286	290	295	299	304	308	313		5
962	318	322	327	331	336	340	345	349	354	358	1	0.5
963	363	367	372	376	381	385	390	394	399	403	2	1.0
964	408	412	417	421	426	430	435	439	444	448	3	1.5
965	453	457	462	466	471	475	480	484	489	493	4	2.0
966	498	502	507	511	516	520	525	529	534	538	5	2.5
967	543	547	552	556	561	565	570	574	579	583	6	3.0
968	588	592	597	601	605	610	614	619	623	628	7	3.5
969	632	637	641	646	650	655	659	664	668	673	8	4.0
970	677	682	686	691	695	700	704	709	713	717	9	4.5
971	722	726	731	735	740	744	749	753	758	762		
972	767	771	776	780	784	789	793	798	802	807		
973	811	816	820	825	829	834	838	843	847	851		
974	856	860	865	869	874	878	883	887	892	896		
975	900	905	909	914	918	923	927	932	936	941		
976	945	949	954	958	963	967	972	976	981	985		
977	989	994	998	*003	*007	*012	*016	*021	*025	*029		
978	99 034	038	043	047	052	056	061	065	069	074		
979	078	083	087	092	096	100	105	109	114	118		
980	123	127	131	136	140	145	149	154	158	162		
981	167	171	176	180	185	189	193	198	202	207		4
982	211	216	220	224	229	233	238	242	247	251	1	0.4
983	255	260	264	269	273	277	282	286	291	295	2	0.8
984	300	304	308	313	317	322	326	330	335	339	3	1.2
985	344	348	352	357	361	366	370	374	379	383	4	1.6
986	388	392	396	401	405	410	414	419	423	427	5	2.0
987	432	436	441	445	449	454	458	463	467	471	6	2.4
988	476	480	484	489	493	498	502	506	511	515	7	2.8
989	520	524	528	533	537	542	546	550	555	559	8	3.2
990	564	568	572	577	581	585	590	594	599	603	9	3.6
991	607	612	616	621	625	629	634	638	642	647		
992	651	656	660	664	669	673	677	682	686	691		
993	695	699	704	708	712	717	721	726	730	734		
994	739	743	747	752	756	760	765	769	774	778		
995	782	787	791	795	800	804	808	813	817	822		
996	826	830	835	839	843	848	852	856	861	865		
997	870	874	878	883	887	891	896	900	904	909		
998	913	917	922	926	930	935	939	944	948	952		
999	957	961	965	970	974	978	983	987	991	996		
1000	00 000	004	009	013	017	022	026	030	035	039		
N	L 0	1	2	3	4	5	6	7	8	9	P P	

9480" = 2° 38' S	4.68 542	T	4.68 588	9780" = 2° 43' S	4.68 541	T	4.68 590
9540 = 2 39	4.68 542		4.68 588	9840 = 2 44	4.68 541		4.68 590
9600 = 2 40	4.68 542		4.68 589	9900 = 2 45	4.68 541		4.68 591
9660 = 2 41	4.68 542		4.68 589	9960 = 2 46	4.68 541		4.68 591
9720 = 2 42	4.68 541		4.68 590	10020 = 2 47	4.68 540		4.68 592

Logaritmos naturais, dos números inteiros, de 1 a 200

Os logaritmos decimais podem ser transformados em
logaritmos naturais multiplicando-os por 0,3025850930

Os logaritmos naturais podem ser transformados em
logaritmos decimais multiplicando-os por 0,4342944819

N	Nat Log	N	Nat Log	N	Nat Log	N	Nat Log	N	Nat Log
0	$-\infty$	40	3.68 888	80	4.38 203	120	4.78 749	160	5.07 517
1	0.00 000	41	3.71 357	81	4.39 445	121	4.79 579	161	5.08 140
2	0.69 315	42	3.73 767	82	4.40 672	122	4.80 402	162	5.08 760
3	1.09 861	43	3.76 120	83	4.41 884	123	4.81 218	163	5.09 375
4	1.38 629	44	3.78 419	84	4.43 082	124	4.82 028	164	5.09 987
5	1.60 944	45	3.80 666	85	4.44 265	125	4.82 831	165	5.10 595
6	1.79 176	46	3.82 864	86	4.45 435	126	4.83 628	166	5.11 199
7	1.94 591	47	3.85 015	87	4.46 591	127	4.84 419	167	5.11 799
8	2.07 944	48	3.87 120	88	4.47 734	128	4.85 203	168	5.12 396
9	2.19 722	49	3.89 182	89	4.48 864	129	4.85 981	169	5.12 990
10	2.30 259	50	3.91 202	90	4.49 981	130	4.86 753	170	5.13 580
11	2.39 790	51	3.93 183	91	4.51 086	131	4.87 520	171	5.14 166
12	2.48 491	52	3.95 124	92	4.52 179	132	4.88 280	172	5.14 749
13	2.56 495	53	3.97 029	93	4.53 260	133	4.89 035	173	5.15 329
14	2.63 906	54	3.98 898	94	4.54 329	134	4.89 784	174	5.15 906
15	2.70 805	55	4.00 733	95	4.55 388	135	4.90 527	175	5.16 479
16	2.77 259	56	4.02 535	96	4.56 435	136	4.91 265	176	5.17 048
17	2.83 321	57	4.04 305	97	4.57 471	137	4.91 998	177	5.17 615
18	2.89 037	58	4.06 044	98	4.58 497	138	4.92 725	178	5.18 178
19	2.94 444	59	4.07 754	99	4.59 512	139	4.93 447	179	5.18 739
20	2.99 573	60	4.09 434	100	4.60 517	140	4.94 164	180	5.19 296
21	3.04 452	61	4.11 087	101	4.61 512	141	4.94 876	181	5.19 850
22	3.09 104	62	4.12 713	102	4.62 497	142	4.95 583	182	5.20 401
23	3.13 549	63	4.14 313	103	4.63 473	143	4.96 284	183	5.20 949
24	3.17 805	64	4.15 888	104	4.64 439	144	4.96 981	184	5.21 494
25	3.21 888	65	4.17 439	105	4.65 396	145	4.97 673	185	5.22 036
26	3.25 810	66	4.18 965	106	4.66 344	146	4.98 361	186	5.22 575
27	3.29 584	67	4.20 469	107	4.67 283	147	4.99 043	187	5.23 111
28	3.33 220	68	4.21 951	108	4.68 213	148	4.99 721	188	5.23 644
29	3.36 730	69	4.23 411	109	4.69 135	149	5.00 395	189	5.24 175
30	3.40 120	70	4.24 850	110	4.70 048	150	5.01 064	190	5.24 702
31	3.43 399	71	4.26 268	111	4.70 953	151	5.01 728	191	5.25 227
32	3.46 574	72	4.27 667	112	4.71 850	152	5.02 388	192	5.25 750
33	3.49 651	73	4.29 046	113	4.72 739	153	5.03 044	193	5.26 269
34	3.52 636	74	4.30 407	114	4.73 620	154	5.03 695	194	5.26 786
35	3.55 535	75	4.31 749	115	4.74 493	155	5.04 343	195	5.27 300
36	3.58 352	76	4.33 073	116	4.75 359	156	5.04 986	196	5.27 811
37	3.61 092	77	4.34 381	117	4.76 217	157	5.05 625	197	5.28 320
38	3.63 759	78	4.35 671	118	4.77 068	158	5.06 260	198	5.28 827
39	3.66 356	79	4.36 945	119	4.77 912	159	5.06 890	199	5.29 330
40	3.68 888	80	4.38 203	120	4.78 749	160	5.07 517	200	5.29 832

Tábua de Logaritmos das Funções Trigonométricas

De 0° a 1° e 89° a 90°

para cada segundo,

e

De 1° a 6° e 84° a 89° para

cada 10 segundos.

L Cos		*90	L Sin										0°	L Tan										180°	*270°			
0.00	'	0'	1'	2'	3'	4'	5'	6'	7'	8'	9'	10'		10'	9'	8'	7'	6'	5'	4'	3'	2'	1'	0'	'			
000	0	—	68557	98660	*16270	*28763	*38454	*46373	*53067	*58866	*63982	*68557	50															
000	10	5.68557	72697	76476	79952	83170	86167	88969	91602	94085	96433	98660	40															
000	20	98660	*00779	*02800	*04730	*06579	*08351	*10055	*11694	*13273	*14797	*16270	30															
000	30	6.16270	17694	19072	20409	21705	22964	24188	25378	26536	27664	28763	20															
000	40	28763	29836	30882	31904	32903	33879	34833	35767	36682	37577	38454	10															
000	50	38454	39315	40158	40985	41797	42594	43376	44145	44900	45643	46373	0	59														
000	1	06.46373	7090	7797	8492	9175	9849	*0512	*1165	*1808	*2442	*3067	50															
000	10	6.53067	3683	4291	4890	5481	6064	6639	7207	7767	8320	8866	40															
000	20	8866	9406	9939	*0465	*0985	*1499	*2007	*2509	*3006	*3496	*3982	30															
000	30	6.63982	4462	4936	5406	5870	6330	6785	7235	7680	8121	8557	20															
000	40	8557	8990	9418	9841	*0261	*0676	*1088	*1496	*1900	*2300	*2697	10															
000	50	6.72697	3090	3479	3865	4248	4627	5003	5376	5746	6112	6476	0	58														
000	2	0	6476	6836	7193	7548	7900	8248	8595	8938	9278	9616	9952	50														
000	10	9952	*0285	*0615	*0943	*1268	*1591	*1911	*2230	*2545	*2859	*3170	40															
000	20	6.83170	3479	3786	4091	4394	4694	4993	5289	5584	5876	6167	30															
000	30	6167	6455	6742	7027	7310	7591	7870	8147	8423	8697	8969	20															
000	40	8969	9240	9509	9776	*0042	*0306	*0568	*0829	*1088	*1346	*1602	10															
000	50	6.91602	1857	2110	2362	2612	2861	3109	3355	3599	3843	4085	0	57														
000	3	0	4085	4325	4565	4803	5039	5275	5509	5742	5973	6204	6433	50														
000	10	6433	6661	6888	7113	7338	7561	7783	8004	8224	8443	8660	40															
000	20	8660	8877	9093	9307	9520	9733	9944	*0155	*0364	*0572	*0779	30															
000	30	7.00779	0986	1191	1395	1599	1801	2003	2203	2403	2602	2800	20															
000	40	2800	2997	3193	3388	3582	3776	3968	4160	4351	4541	4730	10															
000	50	4730	4919	5106	5293	5479	5664	5849	6032	6215	6397	6579	0	56														
000	4	0	6579	6759	6939	7118	7296	7474	7651	7827	8003	8177	8351	50														
000	10	8351	8525	8698	8870	9041	9211	9381	9551	9719	9887	*0055	40															
000	20	7.10055	0222	0388	0553	0718	0882	1046	1209	1371	1533	1694	30															
000	30	1694	1854	2014	2174	2333	2491	2648	2805	2962	3118	3273	20															
000	40	3273	3428	3582	3736	3889	4042	4194	4346	4497	4647	4797	10															
000	50	4797	4947	5096	5244	5392	5540	5687	5833	5979	6125	6270	0	55														
0.00		10'	9'	8'	7'	6'	5'	4'	3'	2'	1'	0'	'															
L Sin		L Cos										89°	L Cot										*179°	289°	*359°			

	144	143	142	141	140	139		138	137	136	135	134	133	
1	14.4	14.3	14.2	14.1	14.0	13.9	1	13.8	13.7	13.6	13.5	13.4	13.3	1
2	28.8	28.6	28.4	28.2	28.0	27.8	2	27.6	27.4	27.2	27.0	26.8	26.6	2
3	43.2	42.9	42.6	42.3	42.0	41.7	3	41.4	41.1	40.8	40.5	40.2	39.9	3
4	57.6	57.2	56.8	56.4	56.0	55.6	4	55.2	54.8	54.4	54.0	53.6	53.2	4
5	72.0	71.5	71.0	70.5	70.0	69.5	5	69.0	68.5	68.0	67.5	67.0	66.5	5
6	86.4	85.8	85.2	84.6	84.0	83.4	6	82.8	82.2	81.6	81.0	80.4	79.8	6
7	100.8	100.1	99.4	98.7	98.0	97.3	7	96.6	95.9	95.2	94.5	93.8	93.1	7
8	115.2	114.4	113.6	112.8	112.0	111.2	8	110.4	109.6	108.8	108.0	107.2	106.4	8
9	129.6	128.7	127.8	126.9	126.0	125.1	9	124.2	123.3	122.4	121.5	120.6	119.7	9
	132	131	130	129	128	127		126	125	124	123	122	121	
1	13.2	13.1	13.0	12.9	12.8	12.7	1	12.6	12.5	12.4	12.3	12.2	12.1	1
2	26.4	26.2	26.0	25.8	25.6	25.4	2	25.2	25.0	24.8	24.6	24.4	24.2	2
3	39.6	39.3	39.0	38.7	38.4	38.1	3	37.8	37.5	37.2	36.9	36.6	36.3	3
4	52.8	52.4	52.0	51.6	51.2	50.8	4	50.4	50.0	49.6	49.2	48.8	48.4	4
5	66.0	65.5	65.0	64.5	64.0	63.5	5	63.0	62.5	62.0	61.5	61.0	60.5	5
6	79.2	78.6	78.0	77.4	76.8	76.2	6	75.6	75.0	74.4	73.8	73.2	72.6	6
7	92.4	91.7	91.0	90.3	89.6	88.9	7	88.2	87.5	86.8	86.1	85.4	84.7	7
8	105.6	104.8	104.0	103.2	102.4	101.6	8	100.8	100.0	99.2	98.4	97.6	96.8	8
9	118.8	117.9	117.0	116.1	115.2	114.3	9	113.4	112.5	111.6	110.7	109.8	108.9	9
	120	119	118	117	116	115		114	113	112	111	110	109	
1	12.0	11.9	11.8	11.7	11.6	11.5	1	11.4	11.3	11.2	11.1	11.0	10.9	1
2	24.0	23.8	23.6	23.4	23.2	23.0	2	22.8	22.6	22.4	22.2	22.0	21.8	2
3	36.0	35.7	35.4	35.1	34.8	34.5	3	34.2	33.9	33.6	33.3	33.0	32.7	3
4	48.0	47.6	47.2	46.8	46.4	46.0	4	45.6	45.2	44.8	44.4	44.0	43.6	4
5	60.0	59.5	59.0	58.5	58.0	57.5	5	57.0	56.5	56.0	55.5	55.0	54.5	5
6	72.0	71.4	70.8	70.2	69.6	69.0	6	68.4	67.8	67.2	66.6	66.0	65.4	6
7	84.0	83.3	82.6	81.9	81.2	80.5	7	79.8	79.1	78.4	77.7	77.0	76.3	7
8	96.0	95.2	94.4	93.6	92.8	92.0	8	91.2	90.4	89.6	88.8	88.0	87.2	8
9	108.0	107.1	106.2	105.3	104.4	103.5	9	102.6	101.7	100.8	99.9	99.0	98.1	9

0.00	'	"	0"	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	
000	5	0	7.1 6270	6414	6558	6702	6845	6987	7130	7271	7413	7553	7694	50
000		10	7694	7834	7973	8112	8250	8389	8526	8663	8800	8937	9072	40
000		20	9072	9208	9343	9478	9612	9746	9879	*0012	*0145	*0277	*0409	30
000		30	7.2 0409	0540	0671	0802	0932	1062	1191	1320	1449	1577	1705	20
000		40	1705	1833	1960	2087	2213	2339	2465	2590	2715	2840	2964	10
000		50	2964	3088	3212	3335	3458	3580	3702	3824	3946	4067	4188	0 54
000	6	0	4188	4308	4428	4548	4668	4787	4906	5024	5142	5260	5378	50
000		10	5378	5495	5612	5728	5845	5961	6076	6192	6307	6421	6536	40
000		20	6536	6650	6764	6877	6991	7104	7216	7329	7441	7552	7664	30
000		30	7664	7775	7886	7997	8107	8217	8327	8437	8546	8655	8763	20
000		40	8763	8872	8980	9088	9196	9303	9410	9517	9623	9730	9836	10
000		50	9836	9942	*0047	*0152	*0257	*0362	*0467	*0571	*0675	*0779	*0882	0 58
000	7	0	7.3 0882	0986	1089	1191	1294	1396	1498	1600	1702	1803	1904	50
000		10	1904	2005	2106	2206	2306	2406	2506	2606	2705	2804	2903	40
000		20	2903	3001	3100	3198	3296	3393	3491	3588	3685	3782	3879	30
000		30	3879	3975	4071	4167	4263	4359	4454	4549	4644	4739	4833	20
000		40	4833	4928	5022	5116	5209	5303	5396	5489	5582	5675	5767	10
000		50	5767	5860	5952	6044	6135	6227	6318	6409	6500	6591	6682	0 52
000	8	0	6682	6772	6862	6952	7042	7132	7221	7310	7399	7488	7577	50
000		10	7577	7666	7754	7842	7930	8018	8106	8193	8280	8367	8454	40
000		20	8454	8541	8628	8714	8800	8887	8972	9058	9144	9229	9314	30
000		30	9314	9400	9484	9569	9654	9738	9822	9906	9990	*0074	*0158	20
000		40	7.4 0158	0241	0324	0408	0491	0573	0656	0739	0821	0903	0985	10
000		50	0985	1067	1149	1230	1312	1393	1474	1555	1636	1716	1797	0 51
000	9	0	1797	1877	1957	2037	2117	2197	2277	2356	2435	2515	2594	50
000		10	2594	2673	2751	2830	2908	2987	3065	3143	3221	3299	3376	40
000		20	3376	3454	3531	3608	3685	3762	3839	3916	3992	4069	4145	30
000		30	4145	4221	4297	4373	4449	4524	4600	4675	4750	4825	4900	20
000		40	4900	4975	5050	5124	5199	5273	5347	5421	5495	5569	5643	10
000		50	5643	5716	5790	5863	5936	6009	6082	6155	6228	6300	6373	0 50

	108	107	106	105	104	103		102	101	99	98	97	96	
1	10.8	10.7	10.6	10.5	10.4	10.3	1	10.2	10.1	9.9	9.8	9.7	9.6	1
2	21.6	21.4	21.2	21.0	20.8	20.6	2	20.4	20.2	19.8	19.6	19.4	19.2	2
3	32.4	32.1	31.8	31.5	31.2	30.9	3	30.6	30.3	29.7	29.4	29.1	28.8	3
4	43.2	42.8	42.4	42.0	41.6	41.2	4	40.8	40.4	39.6	39.2	38.8	38.4	4
5	54.0	53.5	53.0	52.5	52.0	51.5	5	51.0	50.5	49.5	49.0	48.5	48.0	5
6	64.8	64.2	63.6	63.0	62.4	61.8	6	61.2	60.6	59.4	58.8	58.2	57.6	6
7	75.6	74.9	74.2	73.5	72.8	72.1	7	71.4	70.7	69.3	68.6	67.9	67.2	7
8	86.4	85.6	84.8	84.0	83.2	82.4	8	81.6	80.8	79.2	78.4	77.6	76.8	8
9	97.2	96.3	95.4	94.5	93.6	92.7	9	91.8	90.9	89.1	88.2	87.3	86.4	9
	95	94	93	92	91	90		89	88	87	86	85	84	
1	9.5	9.4	9.3	9.2	9.1	9.0	1	8.9	8.8	8.7	8.6	8.5	8.4	1
2	19.0	18.8	18.6	18.4	18.2	18.0	2	17.8	17.6	17.4	17.2	17.0	16.8	2
3	28.5	28.2	27.9	27.6	27.3	27.0	3	26.7	26.4	26.1	25.8	25.5	25.2	3
4	38.0	37.6	37.2	36.8	36.4	36.0	4	35.6	35.2	34.8	34.4	34.0	33.6	4
5	47.5	47.0	46.5	46.0	45.5	45.0	5	44.5	44.0	43.5	43.0	42.5	42.0	5
6	57.0	56.4	55.8	55.2	54.6	54.0	6	53.4	52.8	52.2	51.6	51.0	50.4	6
7	66.5	65.8	65.1	64.4	63.7	63.0	7	62.3	61.6	60.9	60.2	59.5	58.8	7
8	76.0	75.2	74.4	73.6	72.8	72.0	8	71.2	70.4	69.6	68.8	68.0	67.2	8
9	85.5	84.6	83.7	82.8	81.9	81.0	9	80.1	79.2	78.3	77.4	76.5	75.6	9
	83	82	81	80	79	78		77	76	75	74	73	72	
1	8.3	8.2	8.1	8.0	7.9	7.8	1	7.7	7.6	7.5	7.4	7.3	7.2	1
2	16.6	16.4	16.2	16.0	15.8	15.6	2	15.4	15.2	15.0	14.8	14.6	14.4	2
3	24.9	24.6	24.3	24.0	23.7	23.4	3	23.1	22.8	22.5	22.2	21.9	21.6	3
4	33.2	32.8	32.4	32.0	31.6	31.2	4	30.8	30.4	30.0	29.6	29.2	28.8	4
5	41.5	41.0	40.5	40.0	39.5	39.0	5	38.5	38.0	37.5	37.0	36.5	36.0	5
6	49.8	49.2	48.6	48.0	47.4	46.8	6	46.2	45.6	45.0	44.4	43.8	43.2	6
7	58.1	57.4	56.7	56.0	55.3	54.6	7	53.9	53.2	52.5	51.8	51.1	50.4	7
8	66.4	65.6	64.8	64.0	63.2	62.4	8	61.6	60.8	60.0	59.2	58.4	57.6	8
9	74.7	73.8	72.9	72.0	71.1	70.2	9	69.3	68.4	67.5	66.6	65.7	64.8	9

		0"	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	
5	0	7.1 6270	6414	6558	6702	6845	6988	7130	7271	7413	7553	7694	50
	10		7694	7834	7973	8112	8250	8389	8526	8663	8800	8937	40
	20		9073	9208	9343	9478	9612	9746	9879	*0012	*0145	*0277	30
	30	7.2 0409	0540	0671	0802	0932	1062	1191	1321	1449	1577	1705	20
	40		1705	1833	1960	2087	2213	2339	2465	2590	2715	2840	10
	50		2964	3088	3212	3335	3458	3580	3703	3824	3946	4067	0 54
6	0		4188	4308	4428	4548	4668	4787	4906	5024	5142	5260	50
	10		5378	5495	5612	5728	5845	5961	6076	6192	6307	6421	40
	20		6536	6650	6764	6877	6991	7104	7216	7329	7441	7552	30
	30		7664	7775	7886	7997	8107	8217	8327	8437	8546	8655	20
	40		8764	8872	8980	9088	9196	9303	9410	9517	9624	9730	10
	50		9836	9942	*0047	*0153	*0258	*0362	*0467	*0571	*0675	*0779	0 58
7	0	7.3 0882	0986	1089	1192	1294	1396	1499	1600	1702	1803	1904	50
	10		1904	2005	2106	2206	2307	2406	2506	2606	2705	2804	40
	20		2903	3001	3100	3198	3296	3394	3491	3588	3685	3782	30
	30		3879	3975	4071	4167	4263	4359	4454	4549	4644	4739	20
	40		4833	4928	5022	5116	5209	5303	5396	5489	5582	5675	10
	50		5767	5860	5952	6044	6135	6227	6318	6409	6500	6591	0 52
8	0		6682	6772	6862	6952	7042	7132	7221	7310	7400	7488	50
	10		7577	7666	7754	7842	7930	8018	8106	8193	8281	8368	40
	20		8455	8541	8628	8714	8801	8887	8973	9058	9144	9229	30
	30		9315	9400	9485	9569	9654	9738	9823	9907	9991	*0074	20
	40	7.4 0158	0241	0325	0408	0491	0574	0656	0739	0821	0903	0985	10
	50		0985	1067	1149	1230	1312	1393	1474	1555	1636	1716	0 51
9	0		1797	1877	1958	2038	2117	2197	2277	2356	2436	2515	50
	10		2594	2673	2751	2830	2909	2987	3065	3143	3221	3299	40
	20		3376	3454	3531	3608	3686	3762	3839	3916	3992	4069	30
	30		4145	4221	4297	4373	4449	4524	4600	4675	4750	4825	20
	40		4900	4975	5050	5124	5199	5273	5347	5421	5495	5569	10
	50		5643	5716	5790	5863	5936	6009	6082	6155	6228	6300	0 50

L Cos		L Sin											P P	
0.00	'	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°		
000	10	7.46 373	445	517	589	661	733	805	876	948	*019	*090	50	72
000	10	7.47 090	162	233	303	374	445	515	586	656	726	797	40	7.2
000	20	797	867	936	*006	*076	*145	*215	*284	*353	*422	*491	30	14.4
000	30	7.48 491	560	629	698	766	835	903	971	*039	*108	*175	20	21.6
000	40	7.49 175	243	311	379	446	513	581	648	715	782	849	10	28.8
000	50	849	916	982	*049	*115	*182	*248	*314	*380	*446	*512	0	36.0
000	11	7.50 512	578	643	709	774	840	905	970	*035	*100	*165	50	43.2
000	10	7.51 165	230	294	359	423	488	552	616	680	744	808	40	50.4
000	20	808	872	936	999	*063	*126	*190	*253	*316	*379	*442	30	57.6
000	30	7.52 442	505	568	631	693	756	818	881	943	*005	*067	20	64.8
000	40	7.53 067	129	191	253	315	376	438	499	561	622	683	10	7.0
000	50	683	744	805	866	927	988	*049	*109	*170	*230	*291	0	14.0
000	12	7.54 291	351	411	471	531	591	651	711	771	830	890	50	21.0
000	10	890	949	*009	*068	*127	*186	*245	*304	*363	*422	*481	40	28.0
000	20	7.55 481	539	598	656	715	773	831	889	948	*006	*064	30	35.0
000	30	7.56 064	121	179	237	295	352	410	467	524	582	639	20	42.0
000	40	639	696	753	810	867	924	980	*037	*094	*150	*206	10	49.0
000	50	7.57 206	263	319	375	431	488	544	599	655	711	767	0	56.0
000	13	767	822	878	934	989	*044	*100	*155	*210	*265	*320	50	63.0
000	10	7.58 320	375	430	485	539	594	649	703	758	812	866	40	6.8
000	20	866	921	975	*029	*083	*137	*191	*245	*299	*352	*406	30	13.6
000	30	7.59 406	459	513	566	620	673	726	780	833	886	939	20	20.4
000	40	939	992	*045	*097	*150	*203	*255	*308	*360	*413	*465	10	27.2
000	50	7.60 465	517	570	622	674	726	778	830	882	934	985	0	34.0
000	14	985	*037	*089	*140	*192	*243	*294	*346	*397	*448	*499	50	40.8
000	10	7.61 499	550	601	652	703	754	805	855	906	957	*007	40	47.6
000	20	7.62 007	058	108	158	209	259	309	359	409	459	509	30	54.4
000	30	509	559	609	659	708	758	808	857	907	956	*006	20	61.2
000	40	7.63 006	055	104	153	203	252	301	350	399	448	496	10	6.6
000	50	496	545	594	642	691	740	788	837	885	933	982	0	13.2
000	15	982	*030	*078	*126	*174	*222	*270	*318	*366	*414	*461	50	19.8
000	10	7.64 461	509	557	604	652	699	747	794	842	889	936	40	26.4
000	20	936	983	*030	*078	*125	*172	*218	*265	*312	*359	*406	30	33.0
000	30	7.65 406	452	499	546	592	638	685	731	778	824	870	20	39.6
000	40	870	916	962	*009	*055	*101	*146	*192	*238	*284	*330	10	46.2
000	50	7.66 330	375	421	467	512	558	603	649	694	739	784	0	52.8
000	16	784	830	875	920	965	*010	*055	*100	*145	*190	*235	50	59.4
000	10	7.67 235	279	324	369	413	458	502	547	591	636	680	40	6.4
*000	20	680	724	768	813	857	901	945	989	*033	*077	*121	30	12.8
*999	30	7.68 121	165	208	252	296	340	383	427	470	514	557	20	19.2
999	40	557	601	644	687	731	774	817	860	903	946	989	10	25.6
999	50	989	*032	*075	*118	*161	*204	*247	*289	*332	*375	*417	0	32.0
999	17	7.69 417	460	502	545	587	630	672	714	757	799	841	50	38.4
999	10	841	883	925	967	*009	*051	*093	*135	*177	*219	*261	40	44.8
999	20	7.70 261	302	344	386	427	469	510	552	593	635	676	30	51.2
999	30	676	718	759	800	841	883	924	965	*006	*047	*088	20	57.6
999	40	7.71 088	129	170	211	251	292	333	374	414	455	496	10	6.2
999	50	496	536	577	617	658	698	739	779	819	859	900	0	12.2
999	18	900	940	980	*020	*060	*100	*140	*180	*220	*260	*300	50	18.3
999	10	7.72 300	340	380	419	459	499	538	578	618	657	697	40	24.4
999	20	697	736	775	815	854	894	933	972	*011	*050	*090	30	30.5
999	30	7.73 090	129	168	207	246	285	324	363	401	440	479	20	36.6
999	40	479	518	557	595	634	673	711	750	788	827	865	10	42.7
999	50	865	904	942	980	*019	*057	*095	*133	*171	*210	*248	0	48.8
999	19	7.74 248	286	324	362	400	438	476	514	551	589	627	50	54.9
999	10	627	665	703	740	778	815	853	891	928	966	*003	40	6.0
999	20	7.75 003	040	078	115	153	190	227	264	302	339	376	30	12.0
999	30	376	413	450	487	524	561	598	635	672	709	745	20	18.0
999	40	745	782	819	856	892	929	966	*002	*039	*075	*112	10	24.0
999	50	7.76 112	148	185	221	258	294	330	367	403	439	475	0	30.0
9.99	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°			36.0

L Tan

0°

*90°

180°

*270°

	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°		P	P		
10 0	7.46 373	445	517	589	661	733	805	876	948	*019	*091	50	50	58	67	
10 10	7.47 091	162	233	304	374	445	516	586	656	727	797	40	1	5.9	5.8	5.7
20	797	867	937	*006	*076	*146	*215	*284	*354	*423	*492	30	2	11.8	11.6	11.4
30	7.48 492	561	629	698	767	835	903	972	*040	*108	*176	20	3	17.7	17.4	17.1
40	7.49 176	243	311	379	446	514	581	648	715	782	849	10	4	23.6	23.2	22.8
50	849	916	982	*049	*115	*182	*248	*314	*380	*446	*512	0 48	5	29.5	29.0	28.5
11 0	7.50 512	578	643	709	774	840	905	970	*035	*100	*165	50	6	35.4	34.8	34.2
10 10	7.51 165	230	295	359	424	488	552	617	681	745	809	40	7	41.3	40.6	39.9
20	809	872	936	*000	*063	*127	*190	*253	*316	*380	*443	30	8	47.2	46.4	45.6
30	7.52 443	505	568	631	694	756	819	881	943	*005	*067	20	9	53.1	52.2	51.3
40	7.53 067	129	191	253	315	377	438	500	561	622	683	10				
50	683	745	806	867	927	988	*049	*110	*170	*231	*291	0 48				
12 0	7.54 291	351	411	471	532	591	651	711	771	830	890	50				
10 10	890	949	*009	*068	*127	*186	*245	*304	*363	*422	*481	40				
20	7.55 481	539	598	657	715	773	832	890	948	*006	*064	30				
30	7.56 064	122	179	237	295	352	410	467	525	582	639	20				
40	639	696	753	810	867	924	981	*037	*094	*150	*207	10				
50	7.57 207	263	319	376	432	488	544	600	656	711	767	0 47				
13 0	767	823	878	934	989	*045	*100	*155	*210	*265	*320	50				
10 10	7.58 320	375	430	485	540	594	649	704	758	812	867	40				
20	867	921	975	*029	*083	*137	*191	*245	*299	*353	*406	30				
30	7.59 406	460	513	567	620	673	727	780	833	886	939	20				
40	939	992	*045	*098	*150	*203	*256	*308	*361	*413	*466	10				
50	7.60 466	518	570	622	674	726	778	830	882	934	986	0 46				
14 0	986	*037	*089	*140	*192	*243	*295	*346	*397	*449	*500	50				
10 10	7.61 500	551	602	653	704	754	805	856	906	957	*008	40				
20	7.62 008	058	108	159	209	259	310	360	410	460	510	30				
30	510	560	609	659	709	759	808	858	907	957	*006	20				
40	7.63 006	055	105	154	203	252	301	350	399	448	497	10				
50	497	546	594	643	692	740	789	837	885	934	982	0 45				
15 0	982	*030	*078	*127	*175	*223	*271	*318	*366	*414	*462	50				
10 10	7.64 462	510	557	605	652	700	747	795	842	889	937	40				
20	937	984	*031	*078	*125	*172	*219	*266	*313	*359	*406	30				
30	7.65 406	453	499	546	592	639	685	732	778	824	871	20				
40	871	917	963	*009	*055	*101	*147	*193	*239	*284	*330	10				
50	7.66 330	376	421	467	513	558	604	649	694	740	785	0 44				
16 0	785	830	875	920	966	*011	*056	*100	*145	*190	*235	50				
10 10	7.67 235	280	324	369	414	458	503	547	592	636	680	40				
20	680	725	769	813	857	901	946	990	*034	*077	*121	30				
30	7.68 121	165	209	253	296	340	384	427	471	514	558	20				
40	558	601	645	688	731	774	818	861	904	947	990	10				
50	990	*033	*076	*119	*162	*204	*247	*290	*333	*375	*418	0 43				
17 0	7.69 418	460	503	545	588	630	673	715	757	799	842	50				
10 10	842	884	926	968	*010	*052	*094	*136	*178	*219	*261	40				
20	7.70 261	303	345	386	428	469	511	553	594	635	677	30				
30	677	718	759	801	842	883	924	965	*006	*047	*088	20				
40	7.71 088	129	170	211	252	293	334	374	415	456	496	10				
50	496	537	577	618	658	699	739	779	820	860	900	0 42				
18 0	900	940	981	*021	*061	*101	*141	*181	*221	*261	*301	50				
10 10	7.72 301	340	380	420	460	499	539	579	618	658	697	40				
20	697	737	776	815	855	894	933	973	*012	*051	*090	30				
30	7.73 090	129	168	207	246	285	324	363	402	441	480	20				
40	480	518	557	596	635	673	712	750	789	827	866	10				
50	866	904	943	981	*019	*058	*096	*134	*172	*210	*248	0 41				
19 0	7.74 248	286	325	363	401	438	476	514	552	590	628	50				
10 10	628	665	703	741	779	816	854	891	929	966	*004	40				
20	7.75 004	041	079	116	153	191	228	265	302	339	377	30				
30	377	414	451	488	525	562	599	636	672	709	746	20				
40	746	783	820	856	893	930	966	*003	*040	*076	*113	10				
50	7.76 113	149	186	222	258	295	331	367	404	440	476	0 40				

L Cos		L Sin										0°	90°	180°	270°	
9.99		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°				
999	20 0	7.76 475	512	548	584	620	656	692	728	764	800	836	50			
999	10	836	872	907	943	979	*015	*051	*086	*122	*158	*193	40			
999	20	7.77 193	229	264	300	335	371	406	442	477	512	548	30			
999	30	548	583	618	654	689	724	759	794	829	864	899	20			
999	40	899	934	969	*004	*039	*074	*109	*144	*179	*213	*248	10			
999	50	7.78 248	283	318	352	387	422	456	491	525	560	594	0	89		
999	21 0	594	629	663	698	732	766	801	835	869	903	938	50			
999	10	938	972	*006	*040	*074	*108	*142	*176	*210	*244	*278	40			
999	20	7.79 278	312	346	380	414	448	481	515	549	582	616	30			
999	30	616	650	683	717	751	784	818	851	885	918	952	20			
999	40	952	985	*018	*052	*085	*118	*152	*185	*218	*251	*284	10			
999	50	7.80 284	317	351	384	417	450	483	516	549	582	615	0	88		
999	22 0	615	647	680	713	746	779	812	844	877	910	942	50			
999	10	942	975	*008	*040	*073	*105	*138	*170	*203	*235	*268	40			
999	20	7.81 268	300	332	365	397	429	462	494	526	558	591	30			
999	30	591	623	655	687	719	751	783	815	847	879	911	20			
999	40	911	943	975	*007	*039	*070	*102	*134	*166	*198	*229	10			
999	50	7.82 229	261	293	324	356	387	419	451	482	514	545	0	87		
999	23 0	545	577	608	639	671	702	733	765	796	827	859	50			
999	10	859	890	921	952	983	*015	*046	*077	*108	*139	*170	40			
999	20	7.83 170	201	232	263	294	325	356	387	417	448	479	30			
999	30	479	510	541	571	602	633	663	694	725	755	786	20			
999	40	786	817	847	878	908	939	969	*000	*030	*060	*091	10			
999	50	7.84 091	121	151	182	212	242	273	303	333	363	393	0	86		
999	24 0	393	424	454	484	514	544	574	604	634	664	694	50			
999	10	694	724	754	784	814	843	873	903	933	963	992	40			
999	20	992	*022	*052	*082	*111	*141	*171	*200	*230	*259	*289	30			
999	30	7.85 289	318	348	377	407	436	466	495	525	554	583	20			
999	40	583	613	642	671	701	730	759	788	817	847	876	10			
999	50	876	905	934	963	992	*021	*050	*079	*108	*137	*166	0	85		
999	25 0	7.86 166	195	224	253	282	311	340	368	397	426	455	50			
999	10	455	484	512	541	570	598	627	656	684	713	741	40			
999	20	741	770	799	827	856	884	913	941	969	998	*026	30			
999	30	7.87 026	055	083	111	140	168	196	224	253	281	309	20			
999	40	309	337	366	394	422	450	478	506	534	562	590	10			
999	50	590	618	646	674	702	730	758	786	814	842	870	0	84		
999	26 0	870	897	925	953	981	*009	*036	*064	*092	*119	*147	50			
999	10	7.88 147	175	202	230	258	285	313	340	368	395	423	40			
999	20	423	450	478	505	533	560	587	615	642	669	697	30			
999	30	697	724	751	779	806	833	860	888	915	942	969	20			
999	40	969	996	*023	*050	*077	*105	*132	*159	*186	*213	*240	10			
999	50	7.89 240	267	294	320	347	374	401	428	455	482	509	0	83		
999	27 0	509	535	562	589	616	642	669	696	722	749	776	50			
999	10	776	802	829	856	882	909	935	962	988	*015	*041	40			
999	20	7.90 041	068	094	121	147	174	200	226	253	279	305	30			
999	30	305	332	358	384	411	437	463	489	515	542	568	20			
999	40	568	594	620	646	672	698	725	751	777	803	829	10			
999	50	829	855	881	907	933	958	984	*010	*036	*062	*088	0	82		
999	28 0	7.91 088	114	140	165	191	217	243	269	294	320	346	50			
999	10	346	371	397	423	448	474	500	525	551	576	602	40			
999	20	602	627	653	678	704	729	755	780	806	831	857	30			
998	30	857	882	907	933	958	983	*009	*034	*059	*085	*110	20			
998	40	7.92 110	135	160	186	211	236	261	286	311	336	362	10			
998	50	362	387	412	437	462	487	512	537	562	587	612	0	81		
998	29 0	612	637	662	687	712	737	761	786	811	836	861	50			
998	10	861	886	910	935	960	985	*009	*034	*059	*084	*108	40			
998	20	7.93 108	133	158	182	207	231	256	281	305	330	354	30			
998	30	354	379	403	428	452	477	501	526	550	575	599	20			
998	40	599	623	648	672	696	721	745	769	794	818	842	10			
998	50	842	866	891	915	939	963	988	*012	*036	*060	*084	0	80		
9.99		10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°				

*179° 289° *359°

89°

L Cos

	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°		P	P	
20 0	7.76 476	512	548	585	621	657	693	729	765	801	837	50		37	38
10	837	872	908	944	980	*016	*051	*087	*123	*158	*194	40	1	3.7	3.6
20	7.77 194	230	265	301	336	372	407	442	478	513	549	30	2	7.4	7.2
30	549	584	619	654	690	725	760	795	830	865	900	20	3	11.1	10.8
40	900	935	970	*005	*040	*075	*110	*145	*179	*214	*249	10	4	14.8	14.4
50	7.78 249	284	318	353	388	422	457	492	526	561	595	0	5	18.5	18.0
21 0	595	630	664	698	733	767	801	836	870	904	938	50	6	22.2	21.6
10	938	973	*007	*041	*075	*109	*143	*177	*211	*245	*279	40	7	25.9	25.2
20	7.79 279	313	347	381	415	448	482	516	550	583	617	30	8	29.6	28.8
30	617	651	684	718	751	785	819	852	886	919	952	20	9	33.3	32.4
40	952	986	*019	*053	*086	*119	*152	*186	*219	*252	*285	10		35	34
50	7.80 285	318	351	385	418	451	484	517	550	583	615	0	1	3.5	3.4
22 0	615	648	681	714	747	780	812	845	878	911	943	50	2	7.0	6.8
10	943	976	*009	*041	*074	*106	*139	*171	*204	*236	*269	40	3	10.5	10.2
20	7.81 269	301	333	366	398	430	463	495	527	559	591	30	4	14.0	13.6
30	591	624	656	688	720	752	784	816	848	880	912	20	5	17.5	17.0
40	912	944	976	*008	*040	*071	*103	*135	*167	*198	*230	10	6	21.0	20.4
50	7.82 230	262	294	325	357	388	420	452	483	515	546	0	7	24.5	23.8
23 0	546	578	609	640	672	703	734	766	797	828	860	50	8	28.0	27.2
10	860	891	922	953	984	*016	*047	*078	*109	*140	*171	40	9	31.5	30.6
20	7.83 171	202	233	264	295	326	357	388	418	449	480	30		33	32
30	480	511	542	572	603	634	664	695	726	756	787	20	1	3.3	3.2
40	787	818	848	879	909	940	970	*001	*031	*061	*092	10	2	6.6	6.4
50	7.84 092	122	152	183	213	243	274	304	334	364	394	0	3	9.9	9.6
24 0	394	425	455	485	515	545	575	605	635	665	695	50	4	13.2	12.8
10	695	725	755	785	815	845	874	904	934	964	993	40	5	16.5	16.0
20	7.85 290	319	349	378	408	437	467	496	526	555	584	30	6	19.8	19.2
30	584	614	643	672	702	731	760	789	819	848	877	20	7	23.1	22.4
40	877	906	935	964	993	*022	*051	*080	*109	*138	*167	10	8	26.4	25.6
50	7.86 167	196	225	254	283	312	341	370	398	427	456	0	9	29.7	28.8
25 0	456	485	513	542	571	600	628	657	685	714	743	50		31	30
10	743	771	800	828	857	885	914	942	971	999	*027	40	1	3.1	3.0
20	7.87 027	056	084	113	141	169	197	226	254	282	310	30	2	6.2	6.0
30	310	339	367	395	423	451	479	507	535	563	591	20	3	9.3	9.0
40	591	619	647	675	703	731	759	787	815	843	871	10	4	12.4	12.0
50	7.88 148	176	204	231	259	286	314	342	369	397	424	0	5	15.5	15.0
26 0	871	899	926	954	982	*010	*037	*065	*093	*121	*148	50	6	18.6	18.0
10	7.88 148	176	204	231	259	286	314	342	369	397	424	40	7	21.7	21.0
20	424	452	479	506	534	561	589	616	643	671	698	30	8	24.8	24.0
30	698	725	753	780	807	834	862	889	916	943	970	20	9	27.9	27.0
40	970	997	*025	*052	*079	*106	*133	*160	*187	*214	*241	10		29	28
50	7.89 241	268	295	322	349	376	403	429	456	483	510	0	1	2.9	2.8
27 0	510	537	563	590	617	644	670	697	724	750	777	50	2	5.8	5.6
10	777	804	830	857	884	910	937	963	990	*016	*043	40	3	8.7	8.4
20	7.90 043	069	096	122	149	175	201	228	254	280	307	30	4	11.6	11.2
30	307	333	359	386	412	438	464	491	517	543	569	20	5	14.5	14.0
40	569	595	622	648	674	700	726	752	778	804	830	10	6	17.4	16.8
50	7.91 089	115	141	167	193	218	244	270	296	321	347	0	7	20.3	19.6
28 0	347	373	398	424	450	475	501	527	552	578	603	50	8	23.2	22.4
10	603	629	654	680	705	731	756	782	807	833	858	40	9	26.1	25.2
20	858	883	909	934	960	985	*010	*036	*061	*086	*111	30		27	26
30	7.92 111	137	162	187	212	237	263	288	313	338	363	20	1	2.5	2.4
40	363	388	413	438	463	488	513	538	563	588	613	10	2	5.0	4.8
50	7.92 111	137	162	187	212	237	263	288	313	338	363	0	3	7.5	7.2
29 0	613	638	663	688	713	738	763	788	813	838	862	50	4	10.0	9.6
10	862	887	912	937	961	986	*011	*036	*060	*085	*110	40	5	12.5	12.0
20	7.93 110	134	159	184	208	233	258	282	307	331	356	30	6	15.0	14.4
30	356	380	405	429	454	478	503	527	552	576	601	20	7	17.5	16.8
40	601	625	649	674	698	722	747	771	795	820	844	10	8	20.0	19.2
50	7.93 110	134	159	184	208	233	258	282	307	331	356	0	9	22.5	21.6
	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°			P	P

	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°		P	P	
20 0	7.76 476	512	548	585	621	657	693	729	765	801	837	50		37	36
10	837	872	908	944	980	*016	*051	*087	*123	*158	*194	40	1	3.7	3.6
20	7.77 194	230	265	301	336	372	407	442	478	513	549	30	2	7.4	7.2
30	549	584	619	654	690	725	760	795	830	865	900	20	3	11.1	10.8
40	900	935	970	*005	*040	*075	*110	*145	*179	*214	*249	10	4	14.8	14.4
50	7.78 249	284	318	353	388	422	457	492	526	561	595	0	5	18.5	18.0
21 0	595	630	664	698	733	767	801	836	870	904	938	50	6	22.2	21.6
10	938	973	*007	*041	*075	*109	*143	*177	*211	*245	*279	40	7	25.9	25.2
20	7.79 279	313	347	381	415	448	482	516	550	583	617	30	8	29.6	28.8
30	617	651	684	718	751	785	819	852	886	919	952	20	9	33.3	32.4
40	952	986	*019	*053	*086	*119	*152	*186	*219	*252	*285	10		35	34
50	7.80 285	318	351	385	418	451	484	517	550	583	615	0	1	3.5	3.4
22 0	615	648	681	714	747	780	812	845	878	911	943	50	2	7.0	6.8
10	943	976	*009	*041	*074	*106	*139	*171	*204	*236	*269	40	3	10.5	10.2
20	7.81 269	301	333	366	398	430	463	495	527	559	591	30	4	14.0	13.6
30	591	624	656	688	720	752	784	816	848	880	912	20	5	17.5	17.0
40	912	944	976	*008	*040	*071	*103	*135	*167	*198	*230	10	6	21.0	20.4
50	7.82 230	262	294	325	357	388	420	452	483	515	546	0	7	24.5	23.8
23 0	546	578	609	640	672	703	734	766	797	828	860	50	8	28.0	27.2
10	860	891	922	953	984	*016	*047	*078	*109	*140	*171	40	9	31.5	30.6
20	7.83 171	202	233	264	295	326	357	388	418	449	480	30		33	32
30	480	511	542	572	603	634	664	695	726	756	787	20	1	3.3	3.2
40	787	818	848	879	909	940	970	*001	*031	*061	*092	10	2	6.6	6.4
50	7.84 092	122	152	183	213	243	274	304	334	364	394	0	3	9.9	9.6
24 0	394	425	455	485	515	545	575	605	635	665	695	50	4	13.2	12.8
10	695	725	755	785	815	845	874	904	934	964	993	40	5	16.5	16.0
20	7.85 290	319	349	378	408	437	467	496	526	555	584	30	6	19.8	19.2
30	584	614	643	672	702	731	760	789	819	848	877	20	7	23.1	22.4
40	877	906	935	964	993	*022	*051	*080	*109	*138	*167	10	8	26.4	25.6
50	7.86 167	196	225	254	283	312	341	370	398	427	456	0	9	29.7	28.8
25 0	456	485	513	542	571	600	628	657	685	714	743	50		31	30
10	743	771	800	828	857	885	914	942	971	999	*027	40	1	3.1	3.0
20	7.87 027	056	084	113	141	169	197	226	254	282	310	30	2	6.2	6.0
30	310	339	367	395	423	451	479	507	535	563	591	20	3	9.3	9.0
40	591	619	647	675	703	731	759	787	815	843	871	10	4	12.4	12.0
50	7.88 148	176	204	231	259	286	314	342	369	397	424	0	5	15.5	15.0
26 0	871	899	926	954	982	*010	*037	*065	*093	*121	*148	50	6	18.6	18.0
10	7.88 148	176	204	231	259	286	314	342	369	397	424	40	7	21.7	21.0
20	424	452	479	506	534	561	589	616	643	671	698	30	8	24.8	24.0
30	698	725	753	780	807	834	862	889	916	943	970	20	9	27.9	27.0
40	970	997	*025	*052	*079	*106	*133	*160	*187	*214	*241	10		29	28
50	7.89 241	268	295	322	349	376	403	429	456	483	510	0	1	2.9	2.8
27 0	510	537	563	590	617	644	670	697	724	750	777	50	2	5.8	5.6
10	777	804	830	857	884	910	937	963	990	*016	*043	40	3	8.7	8.4
20	7.90 043	069	096	122	149	175	201	228	254	280	307	30	4	11.6	11.2
30	307	333	359	386	412	438	464	491	517	543	569	20	5	14.5	14.0
40	569	595	622	648	674	700	726	752	778	804	830	10	6	17.4	16.8
50	830	856	882	908	934	960	986	*012	*038	*064	*089	0	7	20.3	19.6
28 0	7.91 089	115	141	167	193	218	244	270	296	321	347	50	8	23.2	22.4
10	347	373	398	424	450	475	501	527	552	578	603	40	9	26.1	25.2
20	603	629	654	680	705	731	756	782	807	833	858	30		27	26
30	858	883	909	934	960	985	*010	*036	*061	*086	*111	20	1	2.7	2.6
40	7.92 111	137	162	187	212	237	263	288	313	338	363	10	2	5.4	5.2
50	363	388	413	438	463	488	513	538	563	588	613	0	3	8.1	7.8
29 0	613	638	663	688	713	738	763	788	813	838	862	50	4	10.8	10.4
10	862	887	912	937	961	986	*011	*036	*060	*085	*110	40	5	13.5	13.0
20	7.93 110	134	159	184	208	233	258	282	307	331	356	30	6	16.2	15.6
30	356	380	405	429	454	478	503	527	552	576	601	20	7	18.9	18.2
40	601	625	649	674	698	722	747	771	795	820	844	10	8	21.6	20.8
50	844	868	892	917	941	965	989	*013	*038	*062	*086	0	9	24.3	23.4
	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°			P	P

L. Cos		L. Sin										0°	90°	180°	270°	
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°				
9.99																
998	30 0	7.94 084	108	132	157	181	205	229	253	277	301	325	50			
998	10	325	349	373	397	421	445	469	492	516	540	564	40			
998	20	564	588	612	636	659	683	707	731	755	778	802	30			
998	30	802	826	849	873	897	921	944	968	991	015	039	20			
998	40	7.95 039	062	086	109	133	157	180	204	227	251	274	10			
998	50	274	298	321	344	368	391	415	438	461	485	508	0			28
998	31 0	508	532	555	578	601	625	648	671	695	718	741	50			
998	10	741	764	787	811	834	857	880	903	926	950	973	40			
998	20	973	996	019	042	065	088	111	134	157	180	203	30			
998	30	7.96 203	226	249	272	295	318	341	364	386	409	432	20			
998	40	432	455	478	501	524	546	569	592	615	637	660	10			
998	50	660	683	706	728	751	774	796	819	842	864	887	0			28
998	32 0	887	910	932	955	977	000	022	045	068	090	113	50			
998	10	7.97 113	135	158	180	202	225	247	270	292	315	337	40			
998	20	337	359	382	404	426	449	471	493	516	538	560	30			
998	30	560	583	605	627	649	672	694	716	738	760	782	20			
998	40	782	805	827	849	871	893	915	937	959	981	003	10			
998	50	7.98 003	025	048	070	092	114	136	157	179	201	223	0			27
998	33 0	223	245	267	289	311	333	355	377	398	420	442	50			
998	10	442	464	486	508	529	551	573	595	616	638	660	40			
998	20	660	682	703	725	747	768	790	812	833	855	876	30			
998	30	876	898	920	941	963	984	006	027	049	070	092	20			
998	40	7.99 092	113	135	156	178	199	221	242	264	285	306	10			
998	50	306	328	349	371	392	413	435	456	477	499	520	0			26
998	34 0	520	541	562	584	605	626	647	669	690	711	732	50			
998	10	732	753	775	796	817	838	859	880	901	922	943	40			
998	20	943	965	986	007	028	049	070	091	112	133	154	30			
998	30	8.00 154	175	196	217	238	259	279	300	321	342	363	20			
998	40	363	384	405	426	447	467	488	509	530	551	571	10			
998	50	571	592	613	634	654	675	696	717	737	758	779	0			25
998	35 0	779	799	820	841	861	882	903	923	944	964	985	50			
998	10	985	006	026	047	067	088	108	129	149	170	190	40			
998	20	8.01 190	211	231	252	272	293	313	333	354	374	395	30			
998	30	395	415	435	456	476	496	517	537	557	578	598	20			
998	40	598	618	639	659	679	699	720	740	760	780	801	10			
998	50	801	821	841	861	881	901	922	942	962	982	002	0			24
998	36 0	8.02 002	022	042	062	082	102	123	143	163	183	203	50			
998	10	203	223	243	263	283	303	323	343	362	382	402	40			
998	20	402	422	442	462	482	502	522	542	561	581	601	30			
998	30	601	621	641	661	680	700	720	740	759	779	799	20			
998	40	799	819	838	858	878	898	917	937	957	976	996	10			
998	50	996	016	035	055	074	094	114	133	153	172	192	0			23
997	37 0	8.03 192	212	231	251	270	290	309	329	348	368	387	50			
997	10	387	407	426	446	465	484	504	523	543	562	581	40			
997	20	581	601	620	640	659	678	698	717	736	756	775	30			
997	30	775	794	813	833	852	871	891	910	929	948	967	20			
997	40	967	987	006	025	044	063	083	102	121	140	159	10			
997	50	8.04 159	178	197	217	236	255	274	293	312	331	350	0			22
997	38 0	350	369	388	407	426	445	464	483	502	521	540	50			
997	10	540	559	578	597	616	635	654	673	692	710	729	40			
997	20	729	748	767	786	805	824	843	861	880	899	918	30			
997	30	918	937	955	974	993	012	030	049	068	087	105	20			
997	40	8.05 105	124	143	161	180	199	218	236	255	274	292	10			
997	50	292	311	329	348	367	385	404	422	441	460	478	0			21
997	39 0	478	497	515	534	552	571	589	608	626	645	663	50			
997	10	663	682	700	719	737	756	774	792	811	829	848	40			
997	20	848	866	885	903	921	940	958	976	995	013	031	30			
997	30	8.06 031	050	068	086	105	123	141	159	178	196	214	20			
997	40	214	232	251	269	287	305	324	342	360	378	396	10			
997	50	396	414	433	451	469	487	505	523	541	560	578	0			20
9.99		10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°				

	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°		P	P	
30 0	7.94 086	110	134	158	182	206	230	254	278	302	326	50			
10	326	350	374	398	422	446	470	494	518	542	566	40		25	
20	566	590	613	637	661	685	709	732	756	780	804	30	1	2.5	
30	804	827	851	875	899	922	946	970	993	*017	*040	20	2	5.0	
40	7.95 040	064	088	111	135	158	182	205	229	252	276	10	3	7.5	
50	276	299	323	346	370	393	416	440	463	487	510	0 29	4	10.0	
31 0	510	533	557	580	603	627	650	673	696	720	743	50	5	12.5	
10	743	766	789	812	836	859	882	905	928	951	974	40	6	15.0	
20	974	998	*021	*044	*067	*090	*113	*136	*159	*182	*205	30	7	17.5	
30	7.96 205	228	251	274	297	320	343	365	388	411	434	20	8	20.0	
40	434	457	480	503	525	548	571	594	617	639	662	10	9	22.5	
50	662	685	708	730	753	776	798	821	844	866	889	0 28	24	23	
32 0	889	911	934	957	979	*002	*024	*047	*069	*092	*114	50	1	2.4	2.3
10	7.97 114	137	159	182	204	227	249	272	294	317	339	40	2	4.8	4.6
20	339	361	384	406	428	451	473	495	518	540	562	30	3	7.2	6.9
30	562	585	607	629	651	673	696	718	740	762	784	20	4	9.6	9.2
40	784	807	829	851	873	895	917	939	961	983	*005	10	5	12.0	11.5
50	7.98 005	027	050	072	094	116	138	159	181	203	225	0 27	6	14.4	13.8
33 0	225	247	269	291	313	335	357	379	400	422	444	50	7	16.8	16.1
10	444	466	488	510	531	553	575	597	618	640	662	40	8	19.2	18.4
20	662	684	705	727	749	770	792	814	835	857	878	30	9	21.6	20.7
30	878	900	922	943	965	986	*008	*029	*051	*073	*094	20		22	
40	7.99 094	116	137	158	180	201	223	244	266	287	308	10	1	2.2	
50	308	330	351	373	394	415	437	458	479	501	522	0 26	2	4.4	
34 0	522	543	564	586	607	628	649	671	692	713	734	50	3	6.6	
10	734	755	777	798	819	840	861	882	903	925	946	40	4	8.8	
20	946	967	988	*009	*030	*051	*072	*093	*114	*135	*156	30	5	11.0	
30	8.00 156	177	198	219	240	261	282	303	324	344	365	20	6	13.2	
40	365	386	407	428	449	470	490	511	532	553	574	10	7	15.4	
50	574	594	615	636	657	677	698	719	740	760	781	0 25	8	17.6	
35 0	781	802	822	843	863	884	905	925	946	967	987	50	9	19.8	
10	987	*008	*028	*049	*070	*090	*111	*131	*152	*172	*193	40		21	
20	8.01 193	213	234	254	274	295	315	336	356	377	397	30	1	2.1	
30	397	417	438	458	478	499	519	539	560	580	600	20	2	4.2	
40	600	621	641	661	682	702	722	742	762	783	803	10	3	6.3	
50	803	823	843	863	884	904	924	944	964	984	*004	0 24	4	8.4	
36 0	8.02 004	025	045	065	085	105	125	145	165	185	205	50	5	10.5	
10	205	225	245	265	285	305	325	345	365	385	405	40	6	12.6	
20	405	425	445	464	484	504	524	544	564	584	604	30	7	14.7	
30	604	623	643	663	683	703	722	742	762	782	801	20	8	16.8	
40	801	821	841	861	880	900	920	939	959	979	998	10	9	18.9	
50	998	*018	*038	*057	*077	*097	*116	*136	*155	*175	*194	0 23		20	19
37 0	8.03 194	214	234	253	273	292	312	331	351	370	390	50	1	2.0	1.9
10	390	409	429	448	468	487	506	526	545	565	584	40	2	4.0	3.8
20	584	603	623	642	661	681	700	720	739	758	777	30	3	6.0	5.7
30	777	797	816	835	855	874	893	912	932	951	970	20	4	8.0	7.6
40	970	989	*008	*028	*047	*066	*085	*104	*124	*143	*162	10	5	10.0	9.5
50	8.04 162	181	200	219	238	257	276	296	315	334	353	0 22	6	12.0	11.4
38 0	353	372	391	410	429	448	467	486	505	524	543	50	7	14.0	13.3
10	543	562	581	600	619	638	656	675	694	713	732	40	8	16.0	15.2
20	732	751	770	789	808	826	845	864	883	902	921	30	9	18.0	17.1
30	921	939	958	977	996	*014	*033	*052	*071	*089	*108	20		18	
40	8.05 108	127	146	164	183	202	220	239	258	276	295	10	1	1.8	
50	295	314	332	351	369	388	407	425	444	462	481	0 21	2	3.6	
39 0	481	499	518	537	555	574	592	611	629	648	666	50	3	5.4	
10	666	685	703	722	740	758	777	795	814	832	851	40	4	7.2	
20	851	869	887	906	924	943	961	979	998	*016	*034	30	5	9.0	
30	8.06 034	053	071	089	107	126	144	162	181	199	217	20	6	10.8	
40	217	235	254	272	290	308	326	345	363	381	399	10	7	12.6	
50	399	417	436	454	472	490	508	526	544	562	581	0 20	8	14.4	
	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°		P	P	

L Cos		L Sin										0°	90°	180°	270°	
9.99		0'	1'	2'	3'	4'	5'	6'	7'	8'	9'	10'				
997	40 0	8.06 578	596	614	632	650	668	686	704	722	740	758	50			
997	10	758	776	794	812	830	848	866	884	902	920	938	40			
997	20	938	956	974	992	*010	*028	*046	*063	*081	*099	*117	30			
997	30	8.07 117	135	153	171	189	206	224	242	260	278	295	20			
997	40	295	313	331	349	367	384	402	420	438	455	473	10			
997	50	473	491	509	526	544	562	579	597	615	632	650	0	18		
997	41 0	650	668	685	703	721	738	756	773	791	809	826	50			
997	10	826	844	861	879	896	914	932	949	967	984	*002	40			
997	20	8.08 002	019	037	054	072	089	107	124	141	159	176	30			
997	30	176	194	211	229	246	263	281	298	316	333	350	20			
997	40	350	368	385	403	420	437	455	472	489	506	524	10			
997	50	524	541	558	576	593	610	627	645	662	679	696	0	18		
997	42 0	696	714	731	748	765	783	800	817	834	851	868	50			
997	10	868	886	903	920	937	954	971	988	*006	*023	*040	40			
997	20	8.09 040	057	074	091	108	125	142	159	176	193	210	30			
997	30	210	227	244	261	278	295	312	329	346	363	380	20			
997	40	380	397	414	431	448	465	482	499	516	533	550	10			
997	50	550	567	583	600	617	634	651	668	685	701	718	0	17		
997	43 0	718	735	752	769	786	802	819	836	853	870	886	50			
997	10	886	903	920	937	953	970	987	*004	*020	*037	*054	40			
997	20	8.10 054	070	087	104	120	137	154	170	187	204	220	30			
997	30	220	237	254	270	287	303	320	337	353	370	386	20			
996	40	386	403	420	436	453	469	486	502	519	535	552	10			
996	50	552	568	585	601	618	634	651	667	684	700	717	0	16		
996	44 0	717	733	750	766	782	799	815	832	848	864	881	50			
996	10	881	897	914	930	946	963	979	995	*012	*028	*044	40			
996	20	8.11 044	061	077	093	110	126	142	159	175	191	207	30			
996	30	207	224	240	256	272	289	305	321	337	354	370	20			
996	40	370	386	402	418	435	451	467	483	499	515	531	10			
996	50	531	548	564	580	596	612	628	644	660	677	693	0	15		
996	45 0	693	709	725	741	757	773	789	805	821	837	853	50			
996	10	853	869	885	901	917	933	949	965	981	997	*013	40			
996	20	8.12 013	029	045	061	077	093	109	125	141	157	172	30			
996	30	172	188	204	220	236	252	268	284	300	315	331	20			
996	40	331	347	363	379	395	410	426	442	458	474	489	10			
996	50	489	505	521	537	553	568	584	600	616	631	647	0	14		
996	46 0	647	663	679	694	710	726	741	757	773	788	804	50			
996	10	804	820	836	851	867	882	898	914	929	945	961	40			
996	20	961	976	992	*007	*023	*039	*054	*070	*085	*101	*117	30			
996	30	8.13 117	132	148	163	179	194	210	225	241	256	272	20			
996	40	272	287	303	318	334	349	365	380	396	411	427	10			
996	50	427	442	458	473	489	504	519	535	550	566	581	0	13		
996	47 0	581	596	612	627	643	658	673	689	704	719	735	50			
996	10	735	750	765	781	796	811	827	842	857	873	888	40			
996	20	888	903	919	934	949	964	980	995	*010	*025	*041	30			
996	30	8.14 041	056	071	086	101	117	132	147	162	178	193	20			
996	40	193	208	223	238	253	269	284	299	314	329	344	10			
996	50	344	359	375	390	405	420	435	450	465	480	495	0	12		
996	48 0	495	510	525	541	556	571	586	601	616	631	646	50			
996	10	646	661	676	691	706	721	736	751	766	781	796	40			
996	20	796	811	826	841	856	871	886	901	915	930	945	30			
996	30	945	960	975	990	*005	*020	*035	*050	*065	*079	*094	20			
996	40	8.15 094	109	124	139	154	169	183	198	213	228	243	10			
996	50	243	258	272	287	302	317	332	346	361	376	391	0	11		
996	49 0	391	406	420	435	450	465	479	494	509	523	538	50			
996	10	538	553	568	582	597	612	626	641	656	670	685	40			
996	20	685	700	714	729	744	758	773	788	802	817	832	30			
995	30	832	846	861	875	890	905	919	934	948	963	978	20			
995	40	978	992	*007	*021	*036	*050	*065	*079	*094	*109	*123	10			
995	50	8.16 123	138	152	167	181	196	210	225	239	254	268	0	10		
9.99		10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°				

L Sin

*179° 269° *359°

89°

L Cos

	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°		P	P
40 0	8.06 581	599	617	635	653	671	689	707	725	743	761	50		
10	761	779	797	815	833	851	869	887	905	923	941	40		
20	941	959	977	995	*013	*031	*049	*066	*084	*102	*120	30		
30	8.07 120	138	156	174	192	209	227	245	263	281	298	20		18
40	298	316	334	352	370	387	405	423	441	458	476	10	1	1.8
50	476	494	512	529	547	565	582	600	618	635	653	0 18	2	3.6
41 0	653	671	688	706	724	741	759	776	794	812	829	50	3	5.4
10	829	847	864	882	900	917	935	952	970	987	*005	40	4	7.2
20	8.08 005	022	040	057	075	092	110	127	145	162	180	30	5	9.0
30	180	197	214	232	249	267	284	301	319	336	354	20	6	10.8
40	354	371	388	406	423	440	458	475	492	510	527	10	7	12.6
50	527	544	562	579	596	613	631	648	665	682	700	0 18	8	14.4
42 0	700	717	734	751	769	786	803	820	837	855	872	50	9	16.2
10	872	889	906	923	940	957	975	992	*009	*026	*043	40		
20	8.09 043	060	077	094	111	128	146	163	180	197	214	30		17
30	214	231	248	265	282	299	316	333	350	367	384	20	1	1.7
40	384	401	418	435	452	468	485	502	519	536	553	10	2	3.4
50	553	570	587	604	621	637	654	671	688	705	722	0 17	3	5.1
43 0	722	739	755	772	789	806	823	839	856	873	890	50	4	6.8
10	890	907	923	940	957	974	990	*007	*024	*040	*057	40	5	8.5
20	8.10 057	074	091	107	124	141	157	174	191	207	224	30	6	10.2
30	224	240	257	274	290	307	324	340	357	373	390	20	7	11.9
40	390	407	423	440	456	473	489	506	522	539	555	10	8	13.6
50	555	572	588	605	621	638	654	671	687	704	720	0 16	9	15.3
44 0	720	737	753	770	786	802	819	835	852	868	884	50		
10	884	901	917	934	950	966	983	999	*015	*032	*048	40		16
20	8.11 048	064	081	097	113	130	146	162	178	195	211	30	1	1.6
30	211	227	244	260	276	292	309	325	341	357	373	20	2	3.2
40	373	390	406	422	438	454	471	487	503	519	535	10	3	4.8
50	535	551	567	584	600	616	632	648	664	680	696	0 15	4	6.4
45 0	696	712	729	745	761	777	793	809	825	841	857	50	5	8.0
10	857	873	889	905	921	937	953	969	985	*001	*017	40	6	9.6
20	8.12 017	033	049	065	081	097	113	129	144	160	176	30	7	11.2
30	176	192	208	224	240	256	272	288	303	319	335	20	8	12.8
40	335	351	367	383	398	414	430	446	462	478	493	10	9	14.4
50	493	509	525	541	556	572	588	604	620	635	651	0 14		
46 0	651	667	682	698	714	730	745	761	777	792	808	50		
10	808	824	839	855	871	886	902	918	933	949	965	40		15
20	965	980	996	*011	*027	*043	*058	*074	*089	*105	*121	30	1	1.5
30	8.13 121	136	152	167	183	198	214	229	245	260	276	20	2	3.0
40	276	291	307	322	338	353	369	384	400	415	431	10	3	4.5
50	431	446	462	477	493	508	523	539	554	570	585	0 13	4	6.0
47 0	585	601	616	631	647	662	677	693	708	724	739	50	5	7.5
10	739	754	770	785	800	816	831	846	861	877	892	40	6	9.0
20	892	907	923	938	953	968	984	999	*014	*029	*045	30	7	10.5
30	8.14 045	060	075	090	106	121	136	151	166	182	197	20	8	12.0
40	197	212	227	242	258	273	288	303	318	333	348	10	9	13.5
50	348	364	379	394	409	424	439	454	469	484	500	0 12		
48 0	500	515	530	545	560	575	590	605	620	635	650	50		
10	650	665	680	695	710	725	740	755	770	785	800	40		14
20	800	815	830	845	860	875	890	905	920	935	950	30	1	1.4
30	950	965	980	994	*009	*024	*039	*054	*069	*084	*099	20	2	2.8
40	8.15 099	114	128	143	158	173	188	203	218	232	247	10	3	4.2
50	247	262	277	292	306	321	336	351	366	380	395	0 11	4	5.6
49 0	395	410	425	439	454	469	484	498	513	528	543	50	5	7.0
10	543	557	572	587	602	616	631	646	660	675	690	40	6	8.4
20	690	704	719	734	748	763	778	792	807	822	836	30	7	9.8
30	836	851	865	880	895	909	924	938	953	968	982	20	8	11.2
40	982	997	*011	*026	*040	*055	*070	*084	*099	*113	*128	10	9	12.6
50	8.16 128	142	157	171	186	200	215	229	244	258	273	0 10		
	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	"	P	P

L Cos		L Sin											
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	
9.99													
995	50 0	8.16 268	283	297	311	326	340	355	369	384	398	413	50
995	10	413	427	441	456	470	485	499	513	528	542	557	40
995	20	557	571	585	600	614	628	643	657	672	686	700	30
995	30	700	715	729	743	757	772	786	800	815	829	843	20
995	40	843	858	872	886	900	915	929	943	957	972	986	10
995	50	986	*000	*014	*029	*043	*057	*071	*085	*100	*114	*128	0
995	51 0	8.17 128	142	156	171	185	199	213	227	241	256	270	50
995	10	270	284	298	312	326	340	355	369	383	397	411	40
995	20	411	425	439	453	467	481	495	510	524	538	552	30
995	30	552	566	580	594	608	622	636	650	664	678	692	20
995	40	692	706	720	734	748	762	776	790	804	818	832	10
995	50	832	846	860	874	888	902	916	930	943	957	971	0
995	52 0	8.18 110	971	985	999	*013	*027	*041	*055	*069	*082	*096	50
995	10	110	124	138	152	166	180	193	207	221	235	249	40
995	20	249	263	276	290	304	318	332	345	359	373	387	30
995	30	387	401	414	428	442	456	469	483	497	511	524	20
995	40	524	538	552	566	579	593	607	621	634	648	662	10
995	50	662	675	689	703	716	730	744	757	771	785	798	0
995	53 0	8.19 071	798	812	826	839	853	867	880	894	908	921	50
995	10	935	948	962	976	989	*003	*016	*030	*044	*057	*071	40
995	20	071	084	098	111	125	139	152	166	179	193	206	30
995	30	206	220	233	247	260	274	287	301	314	328	341	20
995	40	341	355	368	382	395	409	422	436	449	463	476	10
995	50	476	489	503	516	530	543	557	570	583	597	610	0
995	54 0	8.20 010	610	624	637	650	664	677	691	704	717	731	50
995	10	744	757	771	784	797	811	824	837	851	864	877	40
995	20	877	891	904	917	931	944	957	971	984	997	*010	30
995	30	010	024	037	050	064	077	090	103	117	130	143	20
995	40	143	156	170	183	196	209	222	236	249	262	275	10
994	50	275	288	302	315	328	341	354	368	381	394	407	0
994	55 0	8.21 060	407	420	433	446	460	473	486	499	512	525	50
994	10	538	552	565	578	591	604	617	630	643	656	669	40
994	20	669	682	696	709	722	735	748	761	774	787	800	30
994	30	800	813	826	839	852	865	878	891	904	917	930	20
994	40	930	943	956	969	982	995	*008	*021	*034	*047	*060	10
994	50	060	073	086	099	112	125	138	151	164	177	189	0
994	56 0	8.22 085	189	202	215	228	241	254	267	280	293	306	50
994	10	319	331	344	357	370	383	396	409	422	434	447	40
994	20	447	460	473	486	499	511	524	537	550	563	576	30
994	30	576	588	601	614	627	640	652	665	678	691	703	20
994	40	703	716	729	742	754	767	780	793	805	818	831	10
994	50	831	844	856	869	882	895	907	920	933	945	958	0
994	57 0	8.23 086	958	971	983	996	*009	*022	*034	*047	*060	*072	50
994	10	085	098	110	123	136	148	161	173	186	199	211	40
994	20	211	224	237	249	262	274	287	300	312	325	337	30
994	30	337	350	363	375	388	400	413	425	438	451	463	20
994	40	463	476	488	501	513	526	538	551	563	576	588	10
994	50	588	601	613	626	638	651	663	676	688	701	713	0
994	58 0	8.24 065	713	726	738	751	763	776	788	801	813	826	50
994	10	838	850	863	875	888	900	913	925	937	950	962	40
994	20	962	975	987	999	*012	*024	*037	*049	*061	*074	*086	30
994	30	086	098	111	123	136	148	160	173	185	197	210	20
994	40	210	222	234	247	259	271	284	296	308	321	333	10
994	50	333	345	357	370	382	394	407	419	431	443	456	0
994	59 0	8.24 065	456	468	480	492	505	517	529	541	554	566	50
994	10	578	590	603	615	627	639	652	664	676	688	700	40
994	20	700	713	725	737	749	761	773	786	798	810	822	30
993	30	822	834	846	859	871	883	895	907	919	931	944	20
993	40	944	956	968	980	992	*004	*016	*028	*041	*053	*065	10
993	50	065	077	089	101	113	125	137	149	161	173	186	0
9.99		10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	

L Sin

*179° 209° *260

89°

L Cos

	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°		P	P
50 0	8.16 273	287	302	316	331	345	359	374	388	403	417	50		
10	417	432	446	460	475	489	504	518	533	547	561	40		
20	561	576	590	604	619	633	647	662	676	691	705	30		
30	705	719	734	748	762	776	791	805	819	834	848	20		
40	848	862	877	891	905	919	934	948	962	976	991	10		
50	991	005	019	033	048	062	076	090	104	119	133	0 9		16
51 0	8.17 133	147	161	175	190	204	218	232	246	260	275	50	1	1.5
10	275	289	303	317	331	345	359	373	388	402	416	40	2	3.0
20	416	430	444	458	472	486	500	514	528	543	557	30	3	4.5
30	557	571	585	599	613	627	641	655	669	683	697	20	4	6.0
40	697	711	725	739	753	767	781	795	809	823	837	10	5	7.5
50	837	851	865	879	893	907	921	934	948	962	976	0 8	6	9.0
52 0	976	990	004	018	032	046	060	074	087	101	115	50	7	10.5
10	8.18 115	129	143	157	171	185	198	212	226	240	254	40	8	12.0
20	254	268	281	295	309	323	337	351	364	378	392	30	9	13.5
30	392	406	419	433	447	461	475	488	502	516	530	20		
40	530	543	557	571	585	598	612	626	639	653	667	10		
50	667	681	694	708	722	735	749	763	776	790	804	0 7		
53 0	804	817	831	845	858	872	886	899	913	926	940	50		14
10	940	954	967	981	994	008	022	035	049	062	076	40	1	1.4
20	8.19 076	090	103	117	130	144	157	171	184	198	211	30	2	2.8
30	211	225	239	252	266	279	293	306	320	333	347	20	3	4.2
40	347	360	374	387	401	414	427	441	454	468	481	10	4	5.6
50	481	495	508	522	535	548	562	575	589	602	616	0 6	5	7.0
54 0	616	629	642	656	669	683	696	709	723	736	749	50	6	8.4
10	749	763	776	789	803	816	830	843	856	870	883	40	7	9.8
20	883	896	910	923	936	949	963	976	989	003	016	30	8	11.2
30	8.20 016	029	042	056	069	082	096	109	122	135	149	20	9	12.6
40	149	162	175	188	201	215	228	241	254	268	281	10		
50	281	294	307	320	334	347	360	373	386	399	413	0 5		
55 0	413	426	439	452	465	478	491	505	518	531	544	50		
10	544	557	570	583	596	610	623	636	649	662	675	40		
20	675	688	701	714	727	740	753	767	780	793	806	30		13
30	806	819	832	845	858	871	884	897	910	923	936	20	1	1.3
40	936	949	962	975	988	001	014	027	040	053	066	10	2	2.6
50	8.21 066	079	092	105	118	131	144	156	169	182	195	0 4	3	3.9
56 0	195	208	221	234	247	260	273	286	299	311	324	50	4	5.2
10	324	337	350	363	376	389	402	414	427	440	453	40	5	6.5
20	453	466	479	492	504	517	530	543	556	569	581	30	6	7.8
30	581	594	607	620	633	645	658	671	684	697	709	20	7	9.1
40	709	722	735	748	760	773	786	799	811	824	837	10	8	10.4
50	837	850	862	875	888	901	913	926	939	951	964	0 3	9	11.7
57 0	964	977	989	002	015	028	040	053	066	078	091	50		
10	8.22 091	104	116	129	142	154	167	179	192	205	217	40		
20	217	230	243	255	268	280	293	306	318	331	343	30		
30	343	356	369	381	394	406	419	431	444	457	469	20		
40	469	482	494	507	519	532	544	557	569	582	595	10		12
50	595	607	620	632	645	657	670	682	695	707	720	0 2	1	1.2
58 0	720	732	744	757	769	782	794	807	819	832	844	50	2	2.4
10	844	857	869	881	894	906	919	931	944	956	968	40	3	3.6
20	968	981	993	006	018	030	043	055	068	080	092	30	4	4.8
30	8.23 092	105	117	130	142	154	167	179	191	204	216	20	5	6.0
40	216	228	241	253	265	278	290	302	315	327	339	10	6	7.2
50	339	352	364	376	388	401	413	425	438	450	462	0 1	7	8.4
59 0	462	474	487	499	511	523	536	548	560	572	585	50	8	9.6
10	585	597	609	621	634	646	658	670	682	695	707	40	9	10.8
20	707	719	731	743	756	768	780	792	804	816	829	30		
30	829	841	853	865	877	889	902	914	926	938	950	20		
40	950	962	974	987	999	011	023	035	047	059	071	10		
50	8.24 071	083	096	108	120	132	144	156	168	180	192	0 0		
	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°		P	P

L Cos		L Sin								P P			
		0°	10°	20°	30°	40°	50°	60°					
9.99									120	119	118		
993	0	8.24 186	306	426	546	665	785	903	59				
993	1		903	*022	*140	*258	*375	*493	58	1	12.0	11.9	11.8
993	2	8.25 009	726	842	958	*074	*189	*304	57	2	24.0	23.8	23.6
993	3	8.26 304	419	533	648	761	875	988	56	3	36.0	35.7	35.4
992	4		988	*101	*214	*326	*438	*550	55	4	48.0	47.6	47.2
992	5	8.27 661	773	883	994	*104	*215	*324	54	5	60.0	59.5	59.0
992	6	8.28 324	434	543	652	761	869	977	53	6	72.0	71.4	70.8
992	7		977	*085	*193	*300	*407	*514	52	7	84.0	83.3	82.6
992	8	8.29 621	727	833	939	*044	*150	*255	51	8	96.0	95.2	94.4
991	9	8.30 255	359	464	568	672	776	879	50	9	108.0	107.1	106.2
991	10		879	*086	*188	*291	*393	*495	49		117	116	115
991	11	8.31 495	597	699	800	901	*002	*103	48	1	11.7	11.6	11.5
990	12	8.32 103	203	303	403	503	602	702	47	2	23.4	23.2	23.0
990	13		702	801	899	998	*096	*195	46	3	35.1	34.8	34.5
990	14	8.33 292	390	488	585	682	779	875	45	4	46.8	46.4	46.0
990	15		875	*068	*164	*260	*355	*450	44	5	58.5	58.0	57.5
989	16	8.34 450	546	640	735	830	924	*018	43	6	70.2	69.6	69.0
989	17	8.35 018	112	206	299	392	485	578	42	7	81.9	81.2	80.5
989	18		578	671	764	856	948	*040	41	8	93.6	92.8	92.0
989	19	8.36 131	223	314	405	496	587	678	40	9	105.3	104.4	103.5
988	20		678	768	858	948	*038	*128	39		114	113	112
988	21	8.37 217	306	395	484	573	662	750	38	1	11.4	11.3	11.2
988	22		750	838	926	*014	*101	*189	37	2	22.8	22.6	22.4
987	23	8.38 276	363	450	537	624	710	796	36	3	34.2	33.9	33.6
987	24		796	882	968	*054	*139	*225	35	4	45.6	45.2	44.8
987	25	8.39 310	395	480	565	649	734	818	34	5	57.0	56.5	56.0
986	26		818	902	986	*070	*153	*237	33	6	68.4	67.8	67.2
986	27	8.40 320	403	486	569	651	734	816	32	7	79.8	79.1	78.4
986	28		816	898	980	*062	*144	*225	31	8	91.2	90.4	89.6
985	29	8.41 307	388	469	550	631	711	792	30	9	102.6	101.7	100.8
985	30		792	872	952	*032	*112	*192	29		110	109	108
985	31	8.42 272	351	430	510	589	667	746	28	1	11.0	10.9	10.8
984	32		746	825	903	982	*060	*138	27	2	22.0	21.8	21.6
984	33	8.43 216	293	371	448	526	603	680	26	3	33.0	32.7	32.4
984	34		680	757	834	910	987	*063	25	4	44.0	43.6	43.2
983	35	8.44 139	216	292	367	443	519	594	24	5	55.0	54.5	54.0
983	36		594	669	745	820	895	969	23	6	66.0	65.4	64.8
983	37	8.45 044	119	193	267	341	415	489	22	7	77.0	76.3	75.6
982	38		489	563	637	710	784	857	21	8	88.0	87.2	86.4
982	39	8.46 366	439	511	583	655	727	799	20	9	99.0	98.1	97.2
982	40		799	870	942	*013	*084	*155	19		106	105	104
981	41	8.47 226	297	368	439	509	580	650	18	1	10.6	10.5	10.4
981	42		650	720	790	860	930	*000	17	2	21.2	21.0	20.8
980	43	8.48 069	139	208	278	347	416	485	16	3	31.8	31.5	31.2
980	44		485	554	622	691	760	828	15	4	42.4	42.0	41.6
979	45	8.49 304	372	439	506	574	641	708	14	5	53.0	52.5	52.0
979	46		708	775	842	908	975	*042	13	6	63.6	63.0	62.4
978	47	8.50 108	174	241	307	373	439	504	12	7	74.2	73.5	72.8
978	48		504	570	636	701	767	832	11	8	84.8	84.0	83.2
977	49	8.51 287	351	416	480	544	609	673	10	9	95.4	94.5	93.6
977	50		673	737	801	864	928	992	9		102	101	100
976	51	8.52 055	119	182	245	308	371	434	8	1	10.2	10.1	10.0
976	52		434	497	560	623	685	748	7	2	20.4	20.2	20.0
975	53	8.53 183	245	306	368	429	491	552	6	3	30.6	30.3	30.0
974	54		552	614	675	736	797	858	5	4	40.8	40.4	40.0
974	55	8.54 319	319	379	439	499	559	619	4	5	51.0	50.5	50.0
974	56		619	679	739	799	859	919	3	6	61.2	60.6	60.0
974	57	8.55 455	455	515	575	635	695	755	2	7	71.4	70.7	70.0
974	58		755	815	875	935	995	*055	1	8	81.6	80.8	80.0
974	59	8.56 591	591	651	711	771	831	891	0	9	91.8	90.9	90.0
974	60		891	951	1011	1071	1131	*081			98	97	96
9.99		60°	50°	40°	30°	20°	10°	0°					

L Cos		L Sin									P P	
9.99		0°	10°	20°	30°	40°	50°	60°			P	P
974	0	8.54 282	342	402	462	522	582	642	59	973		61
973	1	642	702	762	821	881	940	999	58	973	1	6.1
973	2	999	*059	*118	*177	*236	*295	*354	57	972	2	12.2
972	3	8.55 354	413	471	530	589	647	705	56	972	3	18.3
972	4	705	764	822	880	938	996	*054	55	971	4	24.4
971	5	8.56 054	112	170	227	285	342	400	54	971	5	30.5
971	6	400	457	515	572	629	686	743	53	970	6	36.6
970	7	743	800	857	914	970	*027	*084	52	970	7	42.7
970	8	8.57 084	140	196	253	309	365	421	51	969	8	48.8
969	9	421	477	533	589	645	701	757	50	969	9	54.9
969	10	757	812	868	923	979	*034	*089	49	968		60
968	11	8.58 089	144	200	255	310	364	419	48	968	1	6.0
968	12	419	474	529	583	638	693	747	47	967	2	12.0
967	13	747	801	856	910	964	*018	*072	46	967	3	18.0
967	14	8.59 072	126	180	234	288	341	395	45	967	4	24.0
967	15	395	448	502	555	609	662	715	44	966	5	30.0
966	16	715	768	821	874	927	980	*033	43	966	6	36.0
966	17	8.60 033	086	139	191	244	296	349	42	965	7	42.0
965	18	349	401	454	506	558	610	662	41	965	8	48.0
964	19	662	714	766	818	870	922	973	40	964	9	54.0
964	20	973	*025	*077	*128	*180	*231	*282	39	963		59
963	21	8.61 282	334	385	436	487	538	589	38	963	1	5.9
963	22	589	640	691	742	792	843	894	37	962	2	11.8
962	23	894	944	995	*045	*096	*146	*196	36	962	3	17.7
962	24	8.62 196	246	297	347	397	447	497	35	961	4	23.6
961	25	497	546	596	646	696	745	795	34	961	5	29.5
961	26	795	844	894	943	993	*042	*091	33	960	6	35.4
960	27	8.63 091	140	189	238	288	336	385	32	960	7	41.3
960	28	385	434	483	532	580	629	678	31	959	8	47.2
959	29	678	726	775	823	871	920	968	30	959	9	53.1
959	30	968	*016	*064	*112	*160	*208	*256	29	958		58
958	31	8.64 256	304	352	400	448	495	543	28	958	1	5.8
958	32	543	590	638	685	733	780	827	27	957	2	11.6
957	33	827	875	922	969	*016	*063	*110	26	956	3	17.4
956	34	8.65 110	157	204	251	298	344	391	25	956	4	23.2
956	35	391	438	484	531	577	624	670	24	955	5	29.0
955	36	670	717	763	809	855	901	947	23	955	6	34.8
955	37	947	994	*040	*085	*131	*177	*223	22	954	7	40.6
954	38	8.66 223	269	314	360	406	451	497	21	954	8	46.4
954	39	497	542	588	633	678	724	769	20	953	9	52.2
953	40	769	814	859	904	949	994	*039	19	952		57
952	41	8.67 039	084	129	174	219	263	308	18	952	1	5.7
952	42	308	353	397	442	486	531	575	17	951	2	11.4
951	43	575	619	664	708	752	796	841	16	951	3	17.1
951	44	841	885	929	973	*017	*060	*104	15	950	4	22.8
950	45	8.68 104	148	192	236	279	323	367	14	949	5	28.5
949	46	367	410	454	497	540	584	627	13	949	6	34.2
949	47	627	670	714	757	800	843	886	12	948	7	39.9
948	48	886	929	972	*015	*058	*101	*144	11	948	8	45.6
948	49	8.69 144	187	229	272	315	357	400	10	947	9	51.3
947	50	400	442	485	527	570	612	654	9	946		56
946	51	654	697	739	781	823	865	907	8	946	1	5.6
946	52	907	949	991	*033	*075	*117	*159	7	945	2	11.2
945	53	8.70 159	201	242	284	326	367	409	6	944	3	16.8
944	54	409	451	492	534	575	616	658	5	944	4	22.4
944	55	658	699	740	781	823	864	905	4	943	5	28.0
943	56	905	946	987	*028	*069	*110	*151	3	943	6	33.6
942	57	8.71 151	192	232	273	314	355	395	2	942	7	39.2
942	58	395	436	476	517	557	598	638	1	941	8	44.8
941	59	638	679	719	759	800	840	880	0	940	9	50.4

*177° 267° *257°

9-99		0°	10°	20°	30°	40°	50°	60°	59	940	P P	
040	0	8.71 880	920	960	*000	*040	*080	*120	59	940	40	39
940	1	8.72 120	100	200	240	280	320	359	58	939	1	4.0
939	2	359	309	439	478	518	558	597	57	938	2	8.0
938	3	597	637	676	716	755	794	834	56	938	3	12.0
938	4	834	873	912	951	991	*030	*069	55	937	4	16.0
937	5	8.73 069	108	147	186	225	264	303	54	936	5	20.0
936	6	303	342	380	419	458	497	535	53	936	6	24.0
936	7	535	574	613	651	690	728	767	52	935	7	28.0
935	8	767	805	844	882	920	959	997	51	934	8	32.0
934	9	997	*035	*073	*112	*150	*188	*226	50	934	9	36.0
934	10	8.74 226	264	302	340	378	416	454	49	933	38	37
933	11	454	491	529	567	605	642	680	48	932	1	3.8
932	12	680	718	755	793	831	868	906	47	932	2	7.6
932	13	906	943	980	*018	*055	*092	*130	46	931	3	11.4
931	14	8.75 130	167	204	241	279	316	353	45	930	4	15.2
930	15	353	390	427	464	501	538	575	44	929	5	19.0
929	16	575	612	648	685	722	759	795	43	929	6	22.8
929	17	795	832	869	905	942	979	*015	42	928	7	26.6
928	18	8.76 015	052	088	125	161	197	234	41	927	8	30.4
927	19	234	270	306	343	379	415	451	40	926	9	34.2
926	20	451	487	523	559	595	631	667	39	926	36	
926	21	667	703	739	775	811	847	883	38	925	1	3.6
925	22	883	919	954	990	*026	*061	*097	37	924	2	7.2
924	23	8.77 097	133	168	204	239	275	310	36	923	3	10.8
923	24	310	346	381	416	452	487	522	35	923	4	14.4
923	25	522	558	593	628	663	698	733	34	922	5	18.0
922	26	733	768	803	838	873	908	943	33	921	6	21.6
921	27	943	978	*013	*048	*083	*118	*152	32	920	7	25.2
920	28	8.78 152	187	222	257	291	326	360	31	920	8	28.8
920	29	360	395	430	464	499	533	568	30	919	9	32.4
919	30	568	602	636	671	705	739	774	29	918	35	34
918	31	774	808	842	876	910	945	979	28	917	1	3.5
917	32	979	*013	*047	*081	*115	*149	*183	27	917	2	7.0
917	33	8.79 183	217	251	284	318	352	386	26	916	3	10.5
916	34	386	420	453	487	521	555	588	25	915	4	14.0
915	35	588	622	655	689	722	756	789	24	914	5	17.5
914	36	789	823	856	890	923	956	990	23	913	6	21.0
913	37	990	*023	*056	*090	*123	*156	*189	22	913	7	24.5
913	38	8.80 189	222	255	289	322	355	388	21	912	8	28.0
912	39	388	421	454	487	519	552	585	20	911	9	31.5
911	40	585	618	651	684	716	749	782	19	910	33	32
910	41	782	815	847	880	913	945	978	18	909	1	3.3
909	42	978	*010	*043	*075	*108	*140	*173	17	909	2	6.6
909	43	8.81 173	205	237	270	302	334	367	16	908	3	9.9
908	44	367	399	431	463	496	528	560	15	907	4	13.2
907	45	560	592	624	656	688	720	752	14	906	5	16.5
906	46	752	784	816	848	880	912	944	13	905	6	19.8
905	47	944	975	*007	*039	*071	*103	*134	12	904	7	23.1
904	48	8.82 134	166	198	229	261	292	324	11	904	8	26.4
904	49	324	356	387	419	450	482	513	10	903	9	29.7
903	50	513	544	576	607	639	670	701	9	902	31	30
902	51	701	732	764	795	826	857	888	8	901	1	3.1
901	52	888	920	951	982	*013	*044	*075	7	900	2	6.2
900	53	8.83 075	106	137	168	199	230	261	6	899	3	9.3
899	54	261	292	322	353	384	415	446	5	898	4	12.4
898	55	446	476	507	538	568	599	630	4	898	5	15.5
898	56	630	660	691	721	752	783	813	3	897	6	18.6
897	57	813	844	874	904	935	965	996	2	896	7	21.7
896	58	996	*026	*056	*087	*117	*147	*177	1	895	8	24.8
895	59	8.84 177	208	238	268	298	328	358	0	894	9	27.9

		0°	10°	20°	30°	40°	50°	60°			P	P
999												
894	0	8.84 358	389	419	449	479	509	539	59	873		
893	1	539	569	599	629	659	688	718	58	892		
892	2	718	748	778	808	838	867	897	57	891	81	80
891	3	897	927	957	986	*016	*045	*075	56	891	3.1	3.0
891	4	8.85 075	105	134	164	193	223	252	55	890	6.2	6.0
890	5	252	282	311	341	370	400	429	54	889	9.3	9.0
889	6	429	458	488	517	546	576	605	53	888	12.4	12.0
888	7	605	634	663	693	722	751	780	52	887	15.5	15.0
887	8	780	809	838	867	896	926	955	51	886	18.6	18.0
886	9	955	984	*013	*042	*070	*099	*128	50	885	21.7	21.0
885	10	8.86 128	157	186	215	244	273	301	49	884	24.8	24.0
884	11	301	330	359	388	416	445	474	48	883	27.9	27.0
883	12	474	502	531	560	588	617	645	47	882		
882	13	645	674	703	731	760	788	816	46	881	29	
881	14	816	845	873	902	930	958	987	45	880		
880	15	987	*015	*043	*072	*100	*128	*156	44	879	1	2.9
879	16	8.87 156	185	213	241	269	297	325	43	879	2	5.8
879	17	325	354	382	410	438	466	494	42	878	3	8.7
878	18	494	522	550	578	606	634	661	41	877	4	11.6
877	19	661	689	717	745	773	801	829	40	876	5	14.5
876	20	829	856	884	912	940	967	995	39	875	6	17.4
875	21	995	*023	*050	*078	*106	*133	*161	38	874	7	20.3
874	22	8.88 161	188	216	243	271	298	326	37	873	8	23.2
873	23	326	353	381	408	436	463	490	36	872	9	26.1
872	24	490	518	545	572	600	627	654	35	871		
871	25	654	681	709	736	763	790	817	34	870	28	27
870	26	817	845	872	899	926	953	980	33	869	1	2.8
869	27	980	*007	*034	*061	*088	*115	*142	32	868	2	5.6
868	28	8.89 142	169	196	223	250	277	304	31	867	3	8.4
867	29	304	330	357	384	411	438	464	30	866	4	11.2
866	30	464	491	518	545	571	598	625	29	865	5	14.0
865	31	625	651	678	704	731	758	784	28	864	6	16.8
864	32	784	811	837	864	890	917	943	27	863	7	19.6
863	33	943	970	996	*023	*049	*075	*102	26	862	8	22.4
862	34	8.90 102	128	154	181	207	233	260	25	861	9	25.2
861	35	260	286	312	338	364	391	417	24	860		
860	36	417	443	469	495	521	548	574	23	859	28	
859	37	574	600	626	652	678	704	730	22	858		
858	38	730	756	782	808	834	859	885	21	857	1	2.6
857	39	885	911	937	963	989	*015	*040	20	856	2	5.2
856	40	8.91 040	066	092	118	143	169	195	19	855	3	7.8
855	41	195	221	246	272	298	323	349	18	854	4	10.4
854	42	349	374	400	426	451	477	502	17	853	5	13.0
853	43	502	528	553	579	604	630	655	16	852	6	15.6
852	44	655	680	706	731	757	782	807	15	851	7	18.2
851	45	807	833	858	883	909	934	959	14	850	8	20.8
850	46	959	984	*010	*035	*060	*085	*110	13	848	9	23.4
848	47	8.92 110	135	161	186	211	236	261	12	847		
847	48	261	286	311	336	361	386	411	11	846	25	24
846	49	411	436	461	486	511	536	561	10	845		
845	50	561	586	611	636	660	685	710	9	844	1	2.5
844	51	710	735	760	784	809	834	859	8	843	2	5.0
843	52	859	883	908	933	957	982	*007	7	842	3	7.5
842	53	8.93 007	031	056	081	105	130	154	6	841	4	10.0
841	54	154	179	203	228	253	277	301	5	840	5	12.5
840	55	301	326	350	375	399	424	448	4	839	6	15.0
839	56	448	472	497	521	546	570	594	3	838	7	17.5
838	57	594	619	643	667	691	716	740	2	837	8	20.0
837	58	740	764	788	812	837	861	885	1	836	9	22.5
836	59	885	909	933	957	981	*006	*030	0	834		

	0°	10°	20°	30°	40°	50°	60°		P P	
0	8.84 464	493	523	555	585	615	646	59		
1	646	676	706	736	766	796	826	58		
2	826	856	886	916	946	976	*006	57		
3	8.85 006	036	065	095	125	155	185	56		31 30
4	185	214	244	274	304	333	363	55	1	3.1 3.0
5	363	392	422	452	481	511	540	54	2	6.2 6.0
6	540	570	599	629	658	688	717	53	3	9.3 9.0
7	717	747	776	805	835	864	893	52	4	12.4 12.0
8	893	922	952	981	*010	*039	*069	51	5	15.5 15.0
9	8.86 069	098	127	156	185	214	243	50	6	18.6 18.0
10	243	272	301	330	359	388	417	49	7	21.7 21.0
11	417	447	475	504	533	562	591	48	8	24.8 24.0
12	591	619	648	677	706	734	763	47	9	27.9 27.0
13	763	792	821	849	878	907	935	46		
14	935	964	992	*021	*049	*078	*106	45		29
15	8.87 106	135	163	192	220	249	277	44	1	2.9
16	277	305	334	362	390	419	447	43	2	5.8
17	447	475	503	532	560	588	616	42	3	8.7
18	616	644	673	701	729	757	785	41	4	11.6
19	785	813	841	869	897	925	953	40	5	14.5
20	953	981	*009	*037	*065	*092	*120	39	6	17.4
21	8.88 120	148	176	204	231	259	287	38	7	20.3
22	287	315	342	370	398	425	453	37	8	23.2
23	453	481	508	536	563	591	618	36	9	26.1
24	618	646	674	701	728	756	783	35		
25	783	811	838	866	893	920	948	34		28 27
26	948	975	*002	*029	*057	*084	111	33	1	2.8 2.7
27	8.89 111	138	166	193	220	247	274	32	2	5.6 5.4
28	274	301	328	355	383	410	437	31	3	8.4 8.1
29	437	464	491	518	545	571	598	30	4	11.2 10.8
30	598	625	652	679	706	733	760	29	5	14.0 13.5
31	760	786	813	840	867	894	920	28	6	16.8 16.2
32	920	947	974	*000	*027	*054	*080	27	7	19.6 18.9
33	8.90 080	107	134	160	187	213	240	26	8	22.4 21.6
34	240	266	293	319	346	372	399	25	9	25.2 24.3
35	399	425	451	478	504	531	557	24		
36	557	583	610	636	662	688	715	23		26
37	715	741	767	793	820	846	872	22	1	2.6
38	872	898	924	950	976	*002	*029	21	2	5.2
39	8.91 029	055	081	107	133	159	185	20	3	7.8
40	185	211	236	262	288	314	340	19	4	10.4
41	340	366	392	418	443	469	495	18	5	13.0
42	495	521	547	572	598	624	650	17	6	15.6
43	650	675	701	727	752	778	803	16	7	18.2
44	803	829	855	880	906	931	957	15	8	20.8
45	957	982	*008	*033	*059	*084	*110	14	9	23.4
46	8.92 110	135	160	186	211	237	262	13		
47	262	287	313	338	363	388	414	12		25 24
48	414	439	464	489	515	540	565	11	1	2.5 2.4
49	565	590	615	640	665	691	716	10	2	5.0 4.8
50	716	741	766	791	816	841	866	9	3	7.5 7.2
51	866	891	916	941	966	991	*016	8	4	10.0 9.6
52	8.93 016	040	065	090	115	140	165	7	5	12.5 12.0
53	165	190	214	239	264	289	313	6	6	15.0 14.4
54	313	338	363	388	412	437	462	5	7	17.5 16.8
55	462	486	511	536	560	585	609	4	8	20.0 19.2
56	609	634	658	683	707	732	756	3	9	22.5 21.6
57	756	781	805	830	854	879	903	2		
58	903	928	952	976	*001	*025	*049	1		
59	8.94 049	074	098	122	147	171	195	0		
	60°	50°	40°	30°	20°	10°	0°		P P	

L Cos		L Sin									P P	
9.99		0°	10°	20°	30°	40°	50°	60°				
834	0	8.94 030	054	078	102	126	150	174	59	833		
833	1	174	198	222	246	270	294	317	58	832		
832	2	317	341	365	389	413	437	461	57	831		24
831	3	461	484	508	532	556	580	603	56	830	1	2.4
830	4	603	627	651	675	698	722	746	55	829	2	4.8
829	5	746	769	793	817	840	864	887	54	828	3	7.2
828	6	887	911	935	958	982	*005	*029	53	827	4	9.6
827	7	8.95 029	052	076	099	123	146	170	52	825	5	12.0
825	8	170	193	216	240	263	287	310	51	824	6	14.4
824	9	310	333	357	380	403	427	450	50	823	7	16.8
823	10	450	473	496	520	543	566	589	49	822	8	19.2
822	11	589	613	636	659	682	705	728	48	821	9	21.6
821	12	728	752	775	798	821	844	867	47	820		
820	13	867	890	913	936	959	982	*005	46	819		23
819	14	8.96 005	028	051	074	097	120	143	45	817	1	2.3
817	15	143	166	189	212	234	257	280	44	816	2	4.6
816	16	280	303	326	349	371	394	417	43	815	3	6.9
815	17	417	440	462	485	508	531	553	42	814	4	9.2
814	18	553	576	599	621	644	667	689	41	813	5	11.5
813	19	689	712	735	757	780	802	825	40	812	6	13.8
812	20	825	847	870	892	915	937	960	39	810	7	16.1
810	21	960	982	*005	*027	*050	*072	*095	38	809	8	18.4
809	22	8.97 095	117	139	162	184	207	229	37	808	9	20.7
808	23	229	251	274	296	318	341	363	36	807		
807	24	363	385	407	430	452	474	496	35	806		22
806	25	496	518	541	563	585	607	629	34	804	1	2.2
804	26	629	651	674	696	718	740	762	33	803	2	4.4
803	27	762	784	806	828	850	872	894	32	802	3	6.6
802	28	894	916	938	960	982	*004	*026	31	801	4	8.8
801	29	8.98 026	048	070	092	114	135	157	30	800	5	11.0
800	30	157	179	201	223	245	266	288	29	798	6	13.2
798	31	288	310	332	354	375	397	419	28	797	7	15.4
797	32	419	441	462	484	506	527	549	27	796	8	17.6
796	33	549	571	592	614	636	657	679	26	795	9	19.8
795	34	679	701	722	744	765	787	808	25	793		
793	35	808	830	851	873	894	916	937	24	792		
792	36	937	959	980	*002	*023	*045	*066	23	791		21
791	37	8.99 066	087	109	130	152	173	194	22	790	1	2.1
790	38	194	216	237	258	280	301	322	21	788	2	4.2
788	39	322	343	365	386	407	428	450	20	787	3	6.3
787	40	450	471	492	513	534	556	577	19	786	4	8.4
786	41	577	598	619	640	661	682	704	18	785	5	10.5
785	42	704	725	746	767	788	809	830	17	783	6	12.6
783	43	830	851	872	893	914	935	956	16	782	7	14.7
782	44	956	977	998	*019	*040	*061	*082	15	781	8	16.8
781	45	9.00 082	103	123	144	165	186	207	14	780	9	18.9
780	46	207	228	249	269	290	311	332	13	778		
778	47	332	353	373	394	415	436	456	12	777		
777	48	456	477	498	518	539	560	581	11	776		20
776	49	581	601	622	642	663	684	704	10	775	1	2.0
775	50	704	725	746	766	787	807	828	9	773	2	4.0
773	51	828	848	869	889	910	930	951	8	772	3	6.0
772	52	951	971	992	*012	*033	*053	*074	7	771	4	8.0
771	53	9.01 074	094	115	135	155	176	196	6	769	5	10.0
769	54	196	217	237	257	278	298	318	5	768	6	12.0
768	55	318	339	359	379	399	420	440	4	767	7	14.0
767	56	440	460	480	501	521	541	561	3	765	8	16.0
765	57	561	582	602	622	642	662	682	2	764	9	18.0
764	58	682	703	723	743	763	783	803	1	763		
763	59	803	823	843	863	883	903	923	0	761		

	0°	10°	20°	30°	40°	50°	60°		P	P
0	8.04 195	219	244	268	292	316	340	59		
1	340	365	389	413	437	461	485	58		25
2	485	509	533	557	581	606	630	57	1	2.5
3	630	654	678	702	725	749	773	56	2	5.0
4	773	797	821	845	869	893	917	55	3	7.5
5	917	941	964	988	*012	*036	*060	54	4	10.0
6	8.05 060	083	107	131	155	178	202	53	5	12.5
7	202	226	249	273	297	320	344	52	6	15.0
8	344	368	391	415	439	462	486	51	7	17.5
9	486	509	533	556	580	603	627	50	8	20.0
10	627	650	674	697	721	744	767	49	9	22.5
11	767	791	814	838	861	884	908	48		24
12	908	931	954	977	*001	*024	*047	47	1	2.4
13	8.96 047	071	094	117	140	163	187	46	2	4.8
14	187	210	233	256	279	302	325	45	3	7.2
15	325	349	372	395	418	441	464	44	4	9.6
16	464	487	510	533	556	579	602	43	5	12.0
17	602	625	648	671	694	717	739	42	6	14.4
18	739	762	785	808	831	854	877	41	7	16.8
19	877	899	922	945	968	991	*013	40	8	19.2
20	8.97 013	036	059	081	104	127	150	39	9	21.6
21	150	172	195	218	240	263	285	38		23
22	285	308	331	353	376	398	421	37	1	2.3
23	421	443	466	488	511	533	556	36	2	4.6
24	556	578	601	623	646	668	691	35	3	6.9
25	691	713	735	758	780	802	825	34	4	9.2
26	825	847	869	892	914	936	959	33	5	11.5
27	959	981	*003	*025	*048	*070	*092	32	6	13.8
28	8.98 092	114	136	159	181	203	225	31	7	16.1
29	225	247	269	291	314	336	358	30	8	18.4
30	358	380	402	424	446	468	490	29	9	20.7
31	490	512	534	556	578	600	622	28		22
32	622	644	666	687	709	731	753	27	1	2.2
33	753	775	797	819	841	862	884	26	2	4.4
34	884	906	928	950	971	993	*015	25	3	6.6
35	8.99 015	037	058	080	102	123	145	24	4	8.8
36	145	167	188	210	232	253	275	23	5	11.0
37	275	297	318	340	361	383	405	22	6	13.2
38	405	426	448	469	491	512	534	21	7	15.4
39	534	555	577	598	620	641	662	20	8	17.6
40	662	684	705	727	748	769	791	19	9	19.8
41	791	812	834	855	876	898	919	18		21
42	919	940	961	983	*004	*025	*046	17	1	2.1
43	9.00 046	068	089	110	131	153	174	16	2	4.2
44	174	195	216	237	258	280	301	15	3	6.3
45	301	322	343	364	385	406	427	14	4	8.4
46	427	448	469	490	511	532	553	13	5	10.5
47	553	574	595	616	637	658	679	12	6	12.6
48	679	700	721	742	763	784	805	11	7	14.7
49	805	826	846	867	888	909	930	10	8	16.8
50	930	951	971	992	*013	*034	*055	9	9	18.9
51	9.01 055	075	096	117	138	158	179	8		20
52	179	200	220	241	262	282	303	7	1	2.0
53	303	324	344	365	386	406	427	6	2	4.0
54	427	447	468	489	509	530	550	5	3	6.0
55	550	571	591	612	632	653	673	4	4	8.0
56	673	694	714	735	755	776	796	3	5	10.0
57	796	816	837	857	878	898	918	2	6	12.0
58	918	939	959	979	*000	*020	*040	1	7	14.0
59	9.02 040	061	081	101	121	142	162	0	8	16.0
	60°	50°	40°	30°	20°	10°	0°		9	18.0
										P P

9.99		0°	10°	20°	30°	40°	50°	60°			P	P
761	0	9.01 923	943	964	984	*004	*024	*043	59	760		
760	1	9.02 043	063	083	103	123	143	163	58	759		
759	2	163	183	203	223	243	263	283	57	757		21
757	3	283	302	322	342	362	382	402	56	756	I	2.1
756	4	402	421	441	461	481	501	520	55	755	2	4.2
755	5	520	540	560	579	599	619	639	54	753	3	6.3
753	6	639	658	678	698	717	737	757	53	752	4	8.4
752	7	757	776	796	816	835	855	874	52	751	5	10.5
751	8	874	894	914	933	953	972	992	51	749	6	12.6
749	9	992	*011	*031	*050	*070	*089	*109	50	748	7	14.7
748	10	9.03 109	128	148	167	187	206	226	49	747	8	16.8
747	11	226	245	265	284	303	323	342	48	745	9	18.9
745	12	342	361	381	400	420	439	458	47	744		
744	13	458	478	497	516	535	555	574	46	742		20
742	14	574	593	613	632	651	670	690	45	741	I	2.0
741	15	690	709	728	747	766	786	805	44	740	2	4.0
740	16	805	824	843	862	881	901	920	43	738	3	6.0
738	17	920	939	958	977	996	*015	*034	42	737	4	8.0
737	18	9.04 034	053	072	091	110	129	149	41	736	5	10.0
736	19	149	168	187	206	225	244	262	40	734	6	12.0
734	20	262	281	300	319	338	357	376	39	733	7	14.0
733	21	376	395	414	433	452	471	490	38	731	8	16.0
731	22	490	508	527	546	565	584	603	37	730	9	18.0
730	23	603	621	640	659	678	697	715	36	728		
728	24	715	734	753	772	790	809	828	35	727		19
727	25	828	847	865	884	903	921	940	34	726	I	1.9
726	26	940	959	977	996	*015	*033	*052	33	724	2	3.8
724	27	9.05 052	071	089	108	126	145	164	32	723	3	5.7
723	28	164	182	201	219	238	256	275	31	721	4	7.6
721	29	275	293	312	330	349	367	386	30	720	5	9.5
720	30	386	404	423	441	460	478	497	29	718	6	11.4
718	31	497	515	533	552	570	589	607	28	717	7	13.3
717	32	607	625	644	662	681	699	717	27	716	8	15.2
716	33	717	736	754	772	791	809	827	26	714	9	17.1
714	34	827	845	864	882	900	918	937	25	713		
713	35	937	955	973	991	*010	*028	*046	24	711		18
711	36	9.06 046	064	082	101	119	137	155	23	710	I	1.8
710	37	155	173	191	210	228	246	264	22	708	2	3.6
708	38	264	282	300	318	336	354	372	21	707	3	5.4
707	39	372	390	408	426	445	463	481	20	705	4	7.2
705	40	481	499	517	535	553	571	589	19	704	5	9.0
704	41	589	606	624	642	660	678	696	18	702	6	10.8
702	42	696	714	732	750	768	786	804	17	701	7	12.6
701	43	804	821	839	857	875	893	911	16	699	8	14.4
699	44	911	929	946	964	982	*000	*018	15	698	9	16.2
698	45	9.07 018	035	053	071	089	106	124	14	696		17
696	46	124	142	160	177	195	213	231	13	695	I	1.7
695	47	231	248	266	284	301	319	337	12	693	2	3.4
693	48	337	354	372	390	407	425	442	11	692	3	5.1
692	49	442	460	478	495	513	530	548	10	690	4	6.8
690	50	548	566	583	601	618	636	653	9	689	5	8.5
689	51	653	671	688	706	723	741	758	8	687	6	10.2
687	52	758	776	793	811	828	846	863	7	686	7	11.9
686	53	863	881	898	915	933	950	968	6	684	8	13.6
684	54	968	985	*002	*020	*037	*055	*072	5	683	9	15.3
683	55	9.08 072	089	107	124	141	159	176	4	681		
681	56	176	193	211	228	245	262	280	3	680		
680	57	280	297	314	331	349	366	383	2	678		
678	58	383	400	418	435	452	469	486	1	677		
677	59	486	504	521	538	555	572	589	0	675		

**Tábua dos logaritmos das funções
trigonométricas
DE MINUTO A MINUTO**

		L Sin	d	C S	C T	L Tan	e d	L Cot	L Cos	
		∞				∞		∞	0.00 000	60
0	0	∞							0.00 000	60
60	1	6.46 373	30103	5.31 443	5.31 443	6.46 373	30103	3.53 627	0.00 000	59
120	2	6.76 476	17609	5.31 443	5.31 443	6.76 476	17609	3.23 524	0.00 000	58
180	3	6.94 085	12494	5.31 443	5.31 443	6.94 085	12494	3.05 915	0.00 000	57
240	4	7.06 579	9691	5.31 443	5.31 442	7.06 579	9691	2.93 421	0.00 000	56
300	5	7.16 270	7918	5.31 443	5.31 442	7.16 270	7918	2.83 730	0.00 000	55
360	6	7.24 188	6694	5.31 443	5.31 442	7.24 188	6694	2.75 812	0.00 000	54
420	7	7.30 882	5800	5.31 443	5.31 442	7.30 882	5800	2.69 118	0.00 000	53
480	8	7.36 682	5115	5.31 443	5.31 442	7.36 682	5115	2.63 318	0.00 000	52
540	9	7.41 797	4576	5.31 443	5.31 442	7.41 797	4576	2.58 203	0.00 000	51
600	10	7.46 373	4139	5.31 443	5.31 442	7.46 373	4139	2.53 627	0.00 000	50
660	11	7.50 512	3779	5.31 443	5.31 442	7.50 512	3779	2.49 488	0.00 000	49
720	12	7.54 291	3476	5.31 443	5.31 442	7.54 291	3476	2.45 709	0.00 000	48
780	13	7.57 767	3218	5.31 443	5.31 442	7.57 767	3219	2.42 233	0.00 000	47
840	14	7.60 985	2997	5.31 443	5.31 442	7.60 986	2996	2.39 014	0.00 000	46
900	15	7.63 982	2802	5.31 443	5.31 442	7.63 982	2803	2.36 018	0.00 000	45
960	16	7.66 784	2633	5.31 443	5.31 442	7.66 785	2633	2.33 215	0.00 000	44
1020	17	7.69 417	2483	5.31 443	5.31 442	7.69 418	2482	2.30 582	9.99 999	43
1080	18	7.71 900	2348	5.31 443	5.31 442	7.71 900	2348	2.28 100	9.99 999	42
1140	19	7.74 248	2227	5.31 443	5.31 442	7.74 248	2228	2.25 752	9.99 999	41
1200	20	7.76 475	2119	5.31 443	5.31 442	7.76 476	2119	2.23 524	9.99 999	40
1260	21	7.78 594	2021	5.31 443	5.31 442	7.78 595	2020	2.21 405	9.99 999	39
1320	22	7.80 615	1930	5.31 443	5.31 442	7.80 615	1931	2.19 385	9.99 999	38
1380	23	7.82 545	1848	5.31 443	5.31 442	7.82 546	1848	2.17 454	9.99 999	37
1440	24	7.84 393	1773	5.31 443	5.31 442	7.84 394	1773	2.15 606	9.99 999	36
1500	25	7.86 166	1704	5.31 443	5.31 442	7.86 167	1704	2.13 833	9.99 999	35
1560	26	7.87 870	1639	5.31 443	5.31 442	7.87 871	1639	2.12 129	9.99 999	34
1620	27	7.89 509	1579	5.31 443	5.31 442	7.89 510	1579	2.10 490	9.99 999	33
1680	28	7.91 088	1524	5.31 443	5.31 442	7.91 089	1524	2.08 911	9.99 999	32
1740	29	7.92 612	1472	5.31 443	5.31 441	7.92 613	1473	2.07 387	9.99 998	31
1800	30	7.94 084	1424	5.31 443	5.31 441	7.94 086	1424	2.05 914	9.99 998	30
1860	31	7.95 508	1379	5.31 443	5.31 441	7.95 510	1379	2.04 490	9.99 998	29
1920	32	7.96 887	1336	5.31 443	5.31 441	7.96 889	1336	2.03 111	9.99 998	28
1980	33	7.98 223	1297	5.31 443	5.31 441	7.98 225	1297	2.01 775	9.99 998	27
2040	34	7.99 520	1259	5.31 443	5.31 441	7.99 522	1259	2.00 478	9.99 998	26
2100	35	8.00 779	1223	5.31 443	5.31 441	8.00 781	1223	1.99 219	9.99 998	25
2160	36	8.02 002	1190	5.31 443	5.31 441	8.02 004	1190	1.97 996	9.99 998	24
2220	37	8.03 192	1158	5.31 443	5.31 441	8.03 194	1159	1.96 806	9.99 997	23
2280	38	8.04 350	1128	5.31 443	5.31 441	8.04 353	1128	1.95 647	9.99 997	22
2340	39	8.05 478	1100	5.31 443	5.31 441	8.05 481	1100	1.94 519	9.99 997	21
2400	40	8.06 578	1072	5.31 443	5.31 441	8.06 581	1072	1.93 419	9.99 997	20
2460	41	8.07 650	1046	5.31 444	5.31 440	8.07 653	1047	1.92 347	9.99 997	19
2520	42	8.08 696	1022	5.31 444	5.31 440	8.08 700	1022	1.91 300	9.99 997	18
2580	43	8.09 718	999	5.31 444	5.31 440	8.09 722	998	1.90 278	9.99 997	17
2640	44	8.10 717	976	5.31 444	5.31 440	8.10 720	976	1.89 280	9.99 996	16
2700	45	8.11 693	954	5.31 444	5.31 440	8.11 696	955	1.88 304	9.99 996	15
2760	46	8.12 647	934	5.31 444	5.31 440	8.12 651	934	1.87 349	9.99 996	14
2820	47	8.13 581	914	5.31 444	5.31 440	8.13 585	915	1.86 415	9.99 996	13
2880	48	8.14 495	896	5.31 444	5.31 440	8.14 500	895	1.85 500	9.99 996	12
2940	49	8.15 391	877	5.31 444	5.31 440	8.15 395	878	1.84 605	9.99 996	11
3000	50	8.16 268	860	5.31 444	5.31 439	8.16 273	860	1.83 727	9.99 995	10
3060	51	8.17 128	843	5.31 444	5.31 439	8.17 133	843	1.82 867	9.99 995	9
3120	52	8.17 971	827	5.31 444	5.31 439	8.17 976	828	1.82 024	9.99 995	8
3180	53	8.18 798	812	5.31 444	5.31 439	8.18 804	812	1.81 196	9.99 995	7
3240	54	8.19 610	797	5.31 444	5.31 439	8.19 616	797	1.80 384	9.99 995	6
3300	55	8.20 407	782	5.31 444	5.31 439	8.20 413	782	1.79 587	9.99 994	5
3360	56	8.21 189	769	5.31 444	5.31 439	8.21 195	769	1.78 805	9.99 994	4
3420	57	8.21 958	755	5.31 445	5.31 439	8.21 964	756	1.78 036	9.99 994	3
3480	58	8.22 713	743	5.31 445	5.31 438	8.22 720	742	1.77 280	9.99 994	2
3540	59	8.23 456	730	5.31 445	5.31 438	8.23 462	730	1.76 538	9.99 994	1
3600	60	8.24 186		5.31 445	5.31 438	8.24 192		1.75 808	9.99 993	0

		L Sin	d	C S	C T	L Tan	c d	L Cot	L Cos	
3600	0	8.24 186		5.31 445	5.31 438	8.24 192		1.75 808	9.99 993	80
3660	1	8.24 903	717	5.31 445	5.31 438	8.24 910	718	1.75 090	9.99 993	59
3720	2	8.25 609	706	5.31 445	5.31 438	8.25 616	706	1.74 384	9.99 993	58
3780	3	8.26 304	695	5.31 445	5.31 438	8.26 312	696	1.73 688	9.99 993	57
3840	4	8.26 988	684	5.31 445	5.31 437	8.26 996	684	1.73 004	9.99 992	56
3900	5	8.27 661	673	5.31 445	5.31 437	8.27 669	673	1.72 331	9.99 992	55
3960	6	8.28 324	663	5.31 445	5.31 437	8.28 332	663	1.71 668	9.99 992	54
4020	7	8.28 977	653	5.31 445	5.31 437	8.28 986	654	1.71 014	9.99 992	53
4080	8	8.29 621	644	5.31 445	5.31 437	8.29 629	643	1.70 371	9.99 992	52
4140	9	8.30 255	634	5.31 445	5.31 437	8.30 263	634	1.69 737	9.99 991	51
4200	10	8.30 879	624	5.31 446	5.31 437	8.30 888	625	1.69 112	9.99 991	50
4260	11	8.31 495	616	5.31 446	5.31 436	8.31 505	617	1.68 495	9.99 991	49
4320	12	8.32 103	608	5.31 446	5.31 436	8.32 112	607	1.67 888	9.99 990	48
4380	13	8.32 702	599	5.31 446	5.31 436	8.32 711	599	1.67 289	9.99 990	47
4440	14	8.33 292	590	5.31 446	5.31 436	8.33 302	591	1.66 698	9.99 990	46
4500	15	8.33 875	583	5.31 446	5.31 436	8.33 886	584	1.66 114	9.99 990	45
4560	16	8.34 450	575	5.31 446	5.31 435	8.34 461	575	1.65 539	9.99 989	44
4620	17	8.35 018	568	5.31 446	5.31 435	8.35 029	568	1.64 971	9.99 989	43
4680	18	8.35 578	560	5.31 446	5.31 435	8.35 590	561	1.64 410	9.99 989	42
4740	19	8.36 131	553	5.31 446	5.31 435	8.36 143	553	1.63 857	9.99 989	41
4800	20	8.36 678	547	5.31 446	5.31 435	8.36 689	546	1.63 311	9.99 988	40
4860	21	8.37 217	539	5.31 447	5.31 434	8.37 229	540	1.62 771	9.99 988	39
4920	22	8.37 750	533	5.31 447	5.31 434	8.37 762	533	1.62 238	9.99 988	38
4980	23	8.38 276	526	5.31 447	5.31 434	8.38 289	527	1.61 711	9.99 987	37
5040	24	8.38 796	520	5.31 447	5.31 434	8.38 809	520	1.61 191	9.99 987	36
5100	25	8.39 310	514	5.31 447	5.31 434	8.39 323	514	1.60 677	9.99 987	35
5160	26	8.39 818	508	5.31 447	5.31 433	8.39 832	509	1.60 168	9.99 986	34
5220	27	8.40 320	502	5.31 447	5.31 433	8.40 334	502	1.59 666	9.99 986	33
5280	28	8.40 816	496	5.31 447	5.31 433	8.40 830	496	1.59 170	9.99 986	32
5340	29	8.41 307	491	5.31 447	5.31 433	8.41 321	491	1.58 679	9.99 985	31
5400	30	8.41 792	485	5.31 447	5.31 433	8.41 807	486	1.58 193	9.99 985	30
5460	31	8.42 272	480	5.31 448	5.31 432	8.42 287	480	1.57 713	9.99 985	29
5520	32	8.42 746	474	5.31 448	5.31 432	8.42 762	475	1.57 238	9.99 984	28
5580	33	8.43 216	470	5.31 448	5.31 432	8.43 232	470	1.56 768	9.99 984	27
5640	34	8.43 680	464	5.31 448	5.31 432	8.43 696	464	1.56 304	9.99 984	26
5700	35	8.44 139	459	5.31 448	5.31 431	8.44 156	460	1.55 844	9.99 983	25
5760	36	8.44 594	455	5.31 448	5.31 431	8.44 611	455	1.55 389	9.99 983	24
5820	37	8.45 044	450	5.31 448	5.31 431	8.45 061	450	1.54 939	9.99 983	23
5880	38	8.45 489	445	5.31 448	5.31 431	8.45 507	446	1.54 493	9.99 982	22
5940	39	8.45 930	441	5.31 449	5.31 431	8.45 948	441	1.54 052	9.99 982	21
6000	40	8.46 366	436	5.31 449	5.31 430	8.46 385	437	1.53 615	9.99 982	20
6060	41	8.46 799	433	5.31 449	5.31 430	8.46 817	432	1.53 183	9.99 981	19
6120	42	8.47 226	427	5.31 449	5.31 430	8.47 245	428	1.52 755	9.99 981	18
6180	43	8.47 650	424	5.31 449	5.31 430	8.47 669	424	1.52 331	9.99 981	17
6240	44	8.48 069	419	5.31 449	5.31 429	8.48 089	420	1.51 911	9.99 980	16
6300	45	8.48 485	416	5.31 449	5.31 429	8.48 505	416	1.51 495	9.99 980	15
6360	46	8.48 896	411	5.31 449	5.31 429	8.48 917	412	1.51 083	9.99 979	14
6420	47	8.49 304	408	5.31 450	5.31 428	8.49 325	408	1.50 675	9.99 979	13
6480	48	8.49 708	404	5.31 450	5.31 428	8.49 729	404	1.50 271	9.99 979	12
6540	49	8.50 108	400	5.31 450	5.31 428	8.50 130	401	1.49 870	9.99 978	11
6600	50	8.50 504	396	5.31 450	5.31 428	8.50 527	397	1.49 473	9.99 978	10
6660	51	8.50 897	393	5.31 450	5.31 427	8.50 920	393	1.49 080	9.99 977	9
6720	52	8.51 287	390	5.31 450	5.31 427	8.51 310	390	1.48 690	9.99 977	8
6780	53	8.51 673	386	5.31 450	5.31 427	8.51 696	386	1.48 304	9.99 977	7
6840	54	8.52 055	382	5.31 450	5.31 427	8.52 079	383	1.47 921	9.99 976	6
6900	55	8.52 434	379	5.31 451	5.31 426	8.52 459	380	1.47 541	9.99 976	5
6960	56	8.52 810	376	5.31 451	5.31 426	8.52 835	376	1.47 165	9.99 975	4
7020	57	8.53 183	373	5.31 451	5.31 426	8.53 208	373	1.46 792	9.99 975	3
7080	58	8.53 552	369	5.31 451	5.31 425	8.53 578	370	1.46 422	9.99 974	2
7140	59	8.53 919	367	5.31 451	5.31 425	8.53 945	367	1.46 055	9.99 974	1
7200	60	8.54 282	363	5.31 451	5.31 425	8.54 308	363	1.45 692	9.99 974	0

		L Sin	d	C S	C T	L Tan	c d	L Cot	L Cos	
7200	0	8.54 282	360	5.31 451	5.31 425	8.54 308	361	1.45 692	9.99 974	80
7260	1	8.54 642	357	5.31 451	5.31 425	8.54 669	358	1.45 331	9.99 973	59
7320	2	8.54 999	355	5.31 452	5.31 424	8.55 027	355	1.44 973	9.99 973	58
7380	3	8.55 354	351	5.31 452	5.31 424	8.55 382	352	1.44 618	9.99 972	57
7440	4	8.55 705	349	5.31 452	5.31 424	8.55 734	349	1.44 266	9.99 972	56
7500	5	8.56 054	346	5.31 452	5.31 423	8.56 083	346	1.43 917	9.99 971	55
7560	6	8.56 400	343	5.31 452	5.31 423	8.56 429	344	1.43 571	9.99 971	54
7620	7	8.56 743	341	5.31 452	5.31 423	8.56 773	341	1.43 227	9.99 970	53
7680	8	8.57 084	337	5.31 453	5.31 422	8.57 114	338	1.42 886	9.99 970	52
7740	9	8.57 421	336	5.31 453	5.31 422	8.57 452	336	1.42 548	9.99 969	51
7800	10	8.57 757	332	5.31 453	5.31 422	8.57 788	333	1.42 212	9.99 969	50
7860	11	8.58 089	330	5.31 453	5.31 421	8.58 121	330	1.41 879	9.99 968	49
7920	12	8.58 419	328	5.31 453	5.31 421	8.58 451	328	1.41 549	9.99 968	48
7980	13	8.58 747	325	5.31 453	5.31 421	8.58 779	326	1.41 221	9.99 967	47
8040	14	8.59 072	323	5.31 454	5.31 421	8.59 105	323	1.40 895	9.99 967	46
8100	15	8.59 395	320	5.31 454	5.31 420	8.59 428	321	1.40 572	9.99 967	45
8160	16	8.59 715	318	5.31 454	5.31 420	8.59 749	319	1.40 251	9.99 966	44
8220	17	8.60 033	316	5.31 454	5.31 420	8.60 068	316	1.39 932	9.99 966	43
8280	18	8.60 349	313	5.31 454	5.31 419	8.60 384	314	1.39 616	9.99 965	42
8340	19	8.60 662	311	5.31 454	5.31 419	8.60 698	311	1.39 302	9.99 964	41
8400	20	8.60 973	309	5.31 455	5.31 418	8.61 009	310	1.38 991	9.99 964	40
8460	21	8.61 282	307	5.31 455	5.31 418	8.61 319	307	1.38 681	9.99 963	39
8520	22	8.61 589	305	5.31 455	5.31 418	8.61 626	305	1.38 374	9.99 963	38
8580	23	8.61 894	302	5.31 455	5.31 417	8.61 931	303	1.38 069	9.99 962	37
8640	24	8.62 196	301	5.31 455	5.31 417	8.62 234	301	1.37 766	9.99 962	36
8700	25	8.62 497	298	5.31 455	5.31 417	8.62 535	299	1.37 465	9.99 961	35
8760	26	8.62 795	296	5.31 456	5.31 416	8.62 834	297	1.37 166	9.99 961	34
8820	27	8.63 091	294	5.31 456	5.31 416	8.63 131	295	1.36 869	9.99 960	33
8880	28	8.63 385	293	5.31 456	5.31 416	8.63 426	292	1.36 574	9.99 960	32
8940	29	8.63 678	290	5.31 456	5.31 415	8.63 718	291	1.36 282	9.99 959	31
9000	30	8.63 968	288	5.31 456	5.31 415	8.64 009	289	1.35 991	9.99 959	30
9060	31	8.64 256	287	5.31 456	5.31 415	8.64 298	287	1.35 702	9.99 958	29
9120	32	8.64 543	284	5.31 457	5.31 414	8.64 585	285	1.35 415	9.99 958	28
9180	33	8.64 827	283	5.31 457	5.31 414	8.64 870	284	1.35 130	9.99 957	27
9240	34	8.65 110	281	5.31 457	5.31 413	8.65 154	281	1.34 846	9.99 956	26
9300	35	8.65 391	279	5.31 457	5.31 413	8.65 435	280	1.34 565	9.99 956	25
9360	36	8.65 670	277	5.31 457	5.31 413	8.65 715	278	1.34 285	9.99 955	24
9420	37	8.65 947	276	5.31 458	5.31 412	8.65 993	276	1.34 007	9.99 955	23
9480	38	8.66 223	274	5.31 458	5.31 412	8.66 269	274	1.33 731	9.99 954	22
9540	39	8.66 497	272	5.31 458	5.31 412	8.66 543	273	1.33 457	9.99 954	21
9600	40	8.66 769	270	5.31 458	5.31 411	8.66 816	271	1.33 184	9.99 953	20
9660	41	8.67 039	269	5.31 458	5.31 411	8.67 087	269	1.32 913	9.99 952	19
9720	42	8.67 308	267	5.31 459	5.31 410	8.67 356	268	1.32 644	9.99 952	18
9780	43	8.67 575	266	5.31 459	5.31 410	8.67 624	266	1.32 376	9.99 951	17
9840	44	8.67 841	263	5.31 459	5.31 410	8.67 890	264	1.32 110	9.99 951	16
9900	45	8.68 104	263	5.31 459	5.31 409	8.68 154	263	1.31 846	9.99 950	15
9960	46	8.68 367	260	5.31 459	5.31 409	8.68 417	261	1.31 583	9.99 949	14
10020	47	8.68 627	259	5.31 460	5.31 408	8.68 678	260	1.31 322	9.99 949	13
10080	48	8.68 886	258	5.31 460	5.31 408	8.68 938	258	1.31 062	9.99 948	12
10140	49	8.69 144	256	5.31 460	5.31 408	8.69 196	257	1.30 804	9.99 948	11
10200	50	8.69 400	254	5.31 460	5.31 407	8.69 453	255	1.30 547	9.99 947	10
10260	51	8.69 654	253	5.31 460	5.31 407	8.69 708	254	1.30 292	9.99 946	9
10320	52	8.69 907	252	5.31 461	5.31 406	8.69 962	252	1.30 038	9.99 946	8
10380	53	8.70 159	250	5.31 461	5.31 406	8.70 214	251	1.29 786	9.99 945	7
10440	54	8.70 409	249	5.31 461	5.31 405	8.70 465	249	1.29 535	9.99 944	6
10500	55	8.70 658	247	5.31 461	5.31 405	8.70 714	248	1.29 286	9.99 944	5
10560	56	8.70 905	246	5.31 461	5.31 405	8.70 962	246	1.29 038	9.99 943	4
10620	57	8.71 151	244	5.31 462	5.31 404	8.71 208	245	1.28 792	9.99 942	3
10680	58	8.71 395	243	5.31 462	5.31 404	8.71 453	244	1.28 547	9.99 942	2
10740	59	8.71 638	242	5.31 462	5.31 403	8.71 697	243	1.28 303	9.99 941	1
10800	60	8.71 880		5.31 462	5.31 403	8.71 940		1.28 060	9.99 940	0

°	L Sin		L Tan		L Cot		L Cos		P P				
	d	c d	d	c d	d	c d	d	c d	241	250	257	266	274
0	8.71 880	240	8.71 940	241	1.28 060	9.99 940	60		4.0	4.0	4.0	3.9	3.9
1	8.72 120	239	8.72 181	239	1.27 819	9.99 940	59		8.0	8.0	7.9	7.8	7.8
2	8.72 359	238	8.72 420	239	1.27 580	9.99 939	58		12.0	12.0	11.8	11.7	11.7
3	8.72 597	237	8.72 659	237	1.27 341	9.99 938	57		16.1	15.9	15.8	15.7	15.6
4	8.72 834	235	8.72 896	236	1.27 104	9.99 938	56		20.1	19.9	19.8	19.6	19.5
5	8.73 069	234	8.73 132	236	1.26 868	9.99 937	55		24.1	23.9	23.7	23.5	23.4
6	8.73 303	232	8.73 366	234	1.26 634	9.99 936	54		28.1	27.9	27.6	27.4	27.3
7	8.73 535	232	8.73 600	234	1.26 400	9.99 936	53		32.1	31.9	31.6	31.3	31.2
8	8.73 767	230	8.73 832	232	1.26 168	9.99 935	52		36.2	35.8	35.6	35.2	35.1
9	8.73 997	229	8.74 063	231	1.25 937	9.99 934	51		40.2	39.8	39.5	39.2	39.0
10	8.74 226	228	8.74 292	229	1.25 708	9.99 934	50		80.3	79.7	79.0	78.3	78.0
11	8.74 454	226	8.74 521	229	1.25 479	9.99 933	49		120.5	119.5	118.5	117.5	117.0
12	8.74 680	226	8.74 748	227	1.25 252	9.99 932	48		160.7	159.3	158.0	156.7	156.0
13	8.74 906	224	8.74 974	225	1.25 026	9.99 932	47		200.8	199.2	197.5	195.8	195.0
14	8.75 130	223	8.75 199	224	1.24 801	9.99 931	46		222	220	217	215	213
15	8.75 353	222	8.75 423	224	1.24 577	9.99 930	45		1	3.9	3.8	3.8	3.7
16	8.75 575	220	8.75 645	222	1.24 353	9.99 929	44		2	7.7	7.6	7.5	7.4
17	8.75 795	220	8.75 867	220	1.24 133	9.99 929	43		3	11.6	11.4	11.2	11.2
18	8.76 015	219	8.76 087	219	1.23 913	9.99 928	42		4	15.5	15.3	15.1	14.9
19	8.76 234	217	8.76 306	219	1.23 694	9.99 927	41		5	19.3	19.1	18.9	18.6
20	8.76 451	216	8.76 525	217	1.23 475	9.99 926	40		6	23.2	22.9	22.7	22.3
21	8.76 667	216	8.76 742	216	1.23 258	9.99 926	39		7	27.1	26.7	26.5	26.2
22	8.76 883	214	8.76 958	216	1.23 042	9.99 925	38		8	30.9	30.5	30.3	30.0
23	8.77 097	213	8.77 173	215	1.22 827	9.99 924	37		9	34.8	34.4	34.0	33.8
24	8.77 310	212	8.77 387	214	1.22 613	9.99 923	36		10	38.7	38.2	37.8	37.5
25	8.77 522	211	8.77 600	211	1.22 400	9.99 923	35		20	77.3	76.3	75.7	75.0
26	8.77 733	210	8.77 811	211	1.22 189	9.99 922	34		30	116.0	114.5	113.5	112.5
27	8.77 943	210	8.78 022	211	1.21 978	9.99 921	33		40	154.7	152.7	151.3	150.0
28	8.78 152	209	8.78 232	210	1.21 768	9.99 920	32		50	193.3	190.8	189.2	187.5
29	8.78 360	208	8.78 441	208	1.21 559	9.99 920	31		222	220	217	215	213
30	8.78 568	206	8.78 649	206	1.21 351	9.99 919	30		1	3.7	3.7	3.6	3.6
31	8.78 774	205	8.78 855	206	1.21 145	9.99 918	29		2	7.4	7.3	7.2	7.1
32	8.78 979	204	8.79 061	205	1.20 939	9.99 917	28		3	11.1	11.0	10.8	10.6
33	8.79 183	203	8.79 266	204	1.20 734	9.99 917	27		4	14.8	14.7	14.5	14.2
34	8.79 386	203	8.79 470	204	1.20 530	9.99 916	26		5	18.5	18.3	18.1	17.8
35	8.79 588	202	8.79 673	203	1.20 327	9.99 915	25		6	22.2	22.0	21.2	21.3
36	8.79 789	201	8.79 875	202	1.20 125	9.99 914	24		7	25.9	25.7	25.3	25.1
37	8.79 990	201	8.80 076	201	1.19 924	9.99 913	23		8	29.6	29.3	28.9	28.7
38	8.80 189	199	8.80 277	201	1.19 723	9.99 913	22		9	33.3	33.0	32.6	32.2
39	8.80 388	199	8.80 476	199	1.19 524	9.99 912	21		10	37.0	36.7	36.2	35.8
40	8.80 585	197	8.80 674	198	1.19 326	9.99 911	20		20	74.0	73.3	72.3	71.7
41	8.80 782	197	8.80 872	198	1.19 128	9.99 910	19		30	111.0	110.0	108.5	107.5
42	8.80 978	196	8.81 068	196	1.18 932	9.99 909	18		40	148.0	146.7	144.7	143.3
43	8.81 173	195	8.81 264	196	1.18 736	9.99 909	17		50	185.0	183.3	180.8	179.2
44	8.81 367	194	8.81 459	195	1.18 541	9.99 908	16		211	208	208	206	204
45	8.81 560	193	8.81 653	194	1.18 347	9.99 907	15		1	3.5	3.5	3.4	3.4
46	8.81 752	192	8.81 846	193	1.18 154	9.99 906	14		2	7.0	6.9	6.9	6.7
47	8.81 944	192	8.82 038	192	1.17 962	9.99 905	13		3	10.6	10.4	10.3	10.0
48	8.82 134	190	8.82 230	192	1.17 770	9.99 904	12		4	14.1	13.9	13.7	13.5
49	8.82 324	189	8.82 420	190	1.17 580	9.99 904	11		5	17.6	17.3	17.2	16.9
50	8.82 513	188	8.82 610	189	1.17 390	9.99 903	10		6	21.1	20.8	20.6	20.3
51	8.82 701	187	8.82 799	188	1.17 201	9.99 902	9		7	24.6	24.3	24.0	23.7
52	8.82 888	187	8.82 987	188	1.17 013	9.99 901	8		8	28.1	27.7	27.5	27.1
53	8.83 075	186	8.83 175	186	1.16 825	9.99 900	7		9	31.6	31.2	30.9	30.4
54	8.83 261	186	8.83 361	186	1.16 639	9.99 899	6		10	35.2	34.7	34.3	33.8
55	8.83 446	185	8.83 547	186	1.16 453	9.99 898	5		20	70.3	69.3	68.7	67.7
56	8.83 630	184	8.83 732	185	1.16 268	9.99 898	4		30	105.5	104.0	103.0	101.5
57	8.83 813	183	8.83 916	184	1.16 084	9.99 897	3		40	140.7	138.7	137.3	135.3
58	8.83 996	183	8.84 100	182	1.15 900	9.99 896	2		50	175.8	173.3	171.7	169.2
59	8.84 177	181	8.84 282	182	1.15 718	9.99 895	1		208	208	208	206	204
60	8.84 358	181	8.84 464	182	1.15 536	9.99 894	0		1	3.3	3.3	3.2	3.2

	L Sin	d	L Tan	e d	L Cot	L Cos		P P				
0	8.84 358		8.84 464		1.15 536	9.99 894	60	182	181	179	178	177
1	8.84 539	181	8.84 646	182	1.15 354	9.99 893	59	3.0	3.0	3.0	3.0	3.0
2	8.84 718	179	8.84 826	180	1.15 174	9.99 892	58	6.1	6.0	6.0	5.9	5.9
3	8.84 897	179	8.85 006	180	1.14 994	9.99 891	57	9.1	9.0	9.0	8.9	8.9
4	8.85 075	178	8.85 185	179	1.14 815	9.99 891	56	12.1	12.1	11.9	11.9	11.8
5	8.85 252	177	8.85 363	178	1.14 637	9.99 890	55	15.2	15.1	14.9	14.8	14.8
6	8.85 429	177	8.85 540	177	1.14 460	9.99 889	54	18.2	18.1	17.9	17.8	17.7
7	8.85 605	176	8.85 717	177	1.14 283	9.99 888	53	21.2	21.1	20.9	20.8	20.8
8	8.85 780	175	8.85 893	176	1.14 107	9.99 887	52	24.3	24.1	23.9	23.7	23.6
9	8.85 955	175	8.86 069	176	1.13 931	9.99 886	51	27.3	27.2	26.8	26.7	26.6
10	8.86 128	173	8.86 243	174	1.13 757	9.99 885	50	30.3	30.2	29.8	29.7	29.5
11	8.86 301	173	8.86 417	174	1.13 583	9.99 884	49	60.7	60.3	59.7	59.3	59.0
12	8.86 474	173	8.86 591	174	1.13 409	9.99 883	48	91.0	90.5	89.5	89.0	88.5
13	8.86 645	171	8.86 763	172	1.13 237	9.99 882	47	121.3	120.7	119.3	118.7	118.0
14	8.86 816	171	8.86 935	172	1.13 065	9.99 881	46	151.7	150.8	149.2	148.3	147.5
15	8.86 987	171	8.87 106	171	1.12 894	9.99 880	45	176	175	174	173	172
16	8.87 156	169	8.87 277	171	1.12 723	9.99 879	44	2.9	2.9	2.9	2.9	2.9
17	8.87 325	169	8.87 447	170	1.12 553	9.99 879	43	5.9	5.8	5.8	5.8	5.7
18	8.87 494	167	8.87 616	169	1.12 384	9.99 878	42	8.8	8.8	8.7	8.6	8.6
19	8.87 661	168	8.87 785	168	1.12 215	9.99 877	41	11.7	11.7	11.6	11.5	11.5
20	8.87 829	166	8.87 953	167	1.12 047	9.99 876	40	14.7	14.6	14.5	14.4	14.3
21	8.87 995	166	8.88 120	167	1.11 880	9.99 875	39	17.6	17.5	17.4	17.3	17.2
22	8.88 161	165	8.88 287	166	1.11 713	9.99 874	38	20.5	20.4	20.3	20.2	20.1
23	8.88 326	164	8.88 453	165	1.11 547	9.99 873	37	23.5	23.3	23.2	23.1	22.9
24	8.88 490	164	8.88 618	165	1.11 382	9.99 872	36	26.4	26.2	26.1	26.0	25.8
25	8.88 654	163	8.88 783	165	1.11 217	9.99 871	35	29.3	29.2	29.0	28.8	28.7
26	8.88 817	163	8.88 948	163	1.11 052	9.99 870	34	58.7	58.3	58.0	57.7	57.3
27	8.88 980	162	8.89 111	163	1.10 889	9.99 869	33	88.0	87.5	87.0	86.5	86.0
28	8.89 142	162	8.89 274	163	1.10 726	9.99 868	32	117.3	116.7	116.0	115.3	114.7
29	8.89 304	160	8.89 437	161	1.10 563	9.99 867	31	146.7	145.8	145.0	144.2	143.3
30	8.89 464	161	8.89 598	162	1.10 402	9.99 866	30	171	170	169	168	167
31	8.89 625	159	8.89 760	160	1.10 240	9.99 865	29	2.8	2.8	2.8	2.8	2.8
32	8.89 784	159	8.89 920	160	1.10 080	9.99 864	28	5.7	5.7	5.6	5.6	5.6
33	8.89 943	159	8.90 080	160	1.09 920	9.99 863	27	8.6	8.5	8.4	8.4	8.4
34	8.90 102	158	8.90 240	159	1.09 760	9.99 862	26	11.4	11.3	11.3	11.2	11.1
35	8.90 260	157	8.90 399	158	1.09 601	9.99 861	25	14.2	14.2	14.1	14.0	13.9
36	8.90 417	157	8.90 557	158	1.09 443	9.99 860	24	17.1	17.0	16.9	16.8	16.7
37	8.90 574	156	8.90 715	157	1.09 285	9.99 859	23	20.0	19.8	19.7	19.6	19.5
38	8.90 730	155	8.90 872	157	1.09 128	9.99 858	22	22.8	22.7	22.5	22.4	22.3
39	8.90 885	155	8.91 029	157	1.08 971	9.99 857	21	25.6	25.5	25.4	25.2	25.0
40	8.91 040	155	8.91 185	156	1.08 815	9.99 856	20	28.5	28.3	28.2	28.0	27.8
41	8.91 195	154	8.91 340	155	1.08 660	9.99 855	19	57.0	56.7	56.3	56.0	55.7
42	8.91 349	153	8.91 495	155	1.08 505	9.99 854	18	85.5	85.0	84.5	84.0	83.5
43	8.91 502	153	8.91 650	153	1.08 350	9.99 853	17	114.0	113.3	112.7	112.0	111.3
44	8.91 655	152	8.91 803	154	1.08 197	9.99 852	16	142.5	141.7	140.8	140.0	139.2
45	8.91 807	152	8.91 957	154	1.08 043	9.99 851	15	166	165	164	163	162
46	8.91 959	151	8.92 110	152	1.07 890	9.99 850	14	2.8	2.8	2.7	2.7	2.7
47	8.92 110	151	8.92 262	152	1.07 738	9.99 848	13	5.5	5.5	5.5	5.4	5.4
48	8.92 261	150	8.92 414	152	1.07 586	9.99 847	12	8.3	8.2	8.2	8.2	8.1
49	8.92 411	150	8.92 565	151	1.07 435	9.99 846	11	11.1	11.0	10.9	10.9	10.8
50	8.92 561	149	8.92 716	150	1.07 284	9.99 845	10	13.8	13.8	13.7	13.6	13.5
51	8.92 710	149	8.92 866	150	1.07 134	9.99 844	9	16.6	16.5	16.4	16.3	16.2
52	8.92 859	148	8.93 016	149	1.06 984	9.99 843	8	19.4	19.2	19.1	19.0	18.9
53	8.93 007	147	8.93 165	148	1.06 835	9.99 842	7	22.1	22.0	21.9	21.7	21.6
54	8.93 154	147	8.93 313	148	1.06 687	9.99 841	6	24.9	24.8	24.6	24.4	24.3
55	8.93 301	147	8.93 462	149	1.06 538	9.99 840	5	27.7	27.5	27.3	27.2	27.0
56	8.93 448	146	8.93 609	147	1.06 391	9.99 839	4	55.3	55.0	54.7	54.3	54.0
57	8.93 594	146	8.93 756	147	1.06 244	9.99 838	3	83.0	82.5	82.0	81.5	81.0
58	8.93 740	145	8.93 903	146	1.06 097	9.99 837	2	110.7	110.3	109.3	108.7	108.0
59	8.93 885	145	8.94 049	146	1.05 951	9.99 836	1	138.3	137.5	136.7	135.8	135.0
60	8.94 030		8.94 195		1.05 805	9.99 834	0	161	160	159	158	157
	L Cos	d	L Cot	e d	L Tan	L Sin		161	160	159	158	157

0	L Sin	d	L Tan	c d	L Cot	L Cos	P P					
							151	140	148	147	146	
0	8.94 030	144	8.94 195		1.05 803	9.99 834	60	151	140	148	147	146
1	8.94 174	143	8.94 340	145	1.05 660	9.99 833	59	2.5	2.5	2.5	2.4	2.4
2	8.94 317	144	8.94 485	145	1.05 515	9.99 832	58	5.0	5.0	4.9	4.9	4.9
3	8.94 461	142	8.94 630	143	1.05 370	9.99 831	57	7.6	7.4	7.4	7.4	7.3
4	8.94 603	143	8.94 773	144	1.05 227	9.99 830	56	10.1	9.9	9.9	9.8	9.7
5	8.94 746	141	8.94 917	143	1.05 083	9.99 829	55	12.6	12.4	12.3	12.2	12.2
6	8.94 887	142	8.95 060	142	1.04 940	9.99 828	54	15.1	14.9	14.8	14.7	14.6
7	8.95 029	141	8.95 202	142	1.04 798	9.99 827	53	17.6	17.4	17.3	17.2	17.0
8	8.95 170	140	8.95 344	142	1.04 656	9.99 825	52	20.1	19.9	19.7	19.6	19.5
9	8.95 310	140	8.95 486	141	1.04 514	9.99 824	51	22.6	22.4	22.2	22.0	21.9
10	8.95 450	139	8.95 627	140	1.04 373	9.99 823	50	25.2	24.8	24.7	24.5	24.3
11	8.95 589	139	8.95 767	141	1.04 233	9.99 822	49	27.7	27.4	27.2	27.0	26.8
12	8.95 728	139	8.95 908	139	1.04 092	9.99 821	48	30.3	29.9	29.7	29.5	29.3
13	8.95 867	138	8.96 047	140	1.03 952	9.99 820	47	32.8	32.4	32.2	32.0	31.8
14	8.96 005	138	8.96 187	138	1.03 813	9.99 819	46	35.4	34.9	34.7	34.5	34.3
15	8.96 143	137	8.96 325	139	1.03 675	9.99 817	45	38.0	37.5	37.3	37.1	36.9
16	8.96 280	137	8.96 464	138	1.03 536	9.99 816	44	40.6	40.1	39.9	39.7	39.5
17	8.96 417	136	8.96 602	137	1.03 398	9.99 815	43	43.2	42.7	42.5	42.3	42.1
18	8.96 553	136	8.96 739	138	1.03 261	9.99 814	42	45.8	45.3	45.1	44.9	44.7
19	8.96 689	136	8.96 877	136	1.03 123	9.99 813	41	48.4	47.9	47.7	47.5	47.3
20	8.96 825	135	8.97 013	137	1.02 987	9.99 812	40	51.0	50.5	50.3	50.1	49.9
21	8.96 960	135	8.97 150	135	1.02 850	9.99 810	39	53.6	53.1	52.9	52.7	52.5
22	8.97 095	134	8.97 285	136	1.02 715	9.99 809	38	56.2	55.7	55.5	55.3	55.1
23	8.97 229	134	8.97 421	135	1.02 579	9.99 808	37	58.8	58.3	58.1	57.9	57.7
24	8.97 363	133	8.97 556	135	1.02 444	9.99 807	36	61.4	60.9	60.7	60.5	60.3
25	8.97 496	133	8.97 691	134	1.02 309	9.99 806	35	64.0	63.5	63.3	63.1	62.9
26	8.97 629	133	8.97 825	134	1.02 175	9.99 804	34	66.6	66.1	65.9	65.7	65.5
27	8.97 762	132	8.97 959	133	1.02 041	9.99 803	33	69.2	68.7	68.5	68.3	68.1
28	8.97 894	132	8.98 092	133	1.01 908	9.99 802	32	71.8	71.3	71.1	70.9	70.7
29	8.98 026	131	8.98 225	133	1.01 775	9.99 801	31	74.4	73.9	73.7	73.5	73.3
30	8.98 157	131	8.98 358	132	1.01 642	9.99 800	30	77.0	76.5	76.3	76.1	75.9
31	8.98 288	131	8.98 490	132	1.01 510	9.99 798	29	79.6	79.1	78.9	78.7	78.5
32	8.98 419	130	8.98 622	131	1.01 378	9.99 797	28	82.2	81.7	81.5	81.3	81.1
33	8.98 549	130	8.98 753	131	1.01 247	9.99 796	27	84.8	84.3	84.1	83.9	83.7
34	8.98 679	129	8.98 884	131	1.01 116	9.99 795	26	87.4	86.9	86.7	86.5	86.3
35	8.98 808	129	8.99 015	130	1.00 985	9.99 793	25	90.0	89.5	89.3	89.1	88.9
36	8.98 937	129	8.99 145	130	1.00 855	9.99 792	24	92.6	92.1	91.9	91.7	91.5
37	8.99 066	128	8.99 275	130	1.00 725	9.99 791	23	95.2	94.7	94.5	94.3	94.1
38	8.99 194	128	8.99 405	129	1.00 595	9.99 790	22	97.8	97.3	97.1	96.9	96.7
39	8.99 322	128	8.99 534	128	1.00 466	9.99 788	21	100.4	99.9	99.7	99.5	99.3
40	8.99 450	127	8.99 662	129	1.00 338	9.99 787	20	103.0	102.5	102.3	102.1	101.9
41	8.99 577	127	8.99 791	128	1.00 209	9.99 786	19	105.6	105.1	104.9	104.7	104.5
42	8.99 704	126	8.99 919	127	1.00 081	9.99 785	18	108.2	107.7	107.5	107.3	107.1
43	8.99 830	126	9.00 046	128	0.99 954	9.99 783	17	110.8	110.3	110.1	109.9	109.7
44	8.99 956	126	9.00 174	127	0.99 826	9.99 782	16	113.4	112.9	112.7	112.5	112.3
45	9.00 082	125	9.00 301	126	0.99 699	9.99 781	15	116.0	115.5	115.3	115.1	114.9
46	9.00 207	125	9.00 427	126	0.99 573	9.99 780	14	118.6	118.1	117.9	117.7	117.5
47	9.00 332	124	9.00 553	126	0.99 447	9.99 778	13	121.2	120.7	120.5	120.3	120.1
48	9.00 456	124	9.00 679	126	0.99 321	9.99 777	12	123.8	123.3	123.1	122.9	122.7
49	9.00 581	123	9.00 805	125	0.99 195	9.99 776	11	126.4	125.9	125.7	125.5	125.3
50	9.00 704	123	9.00 930	125	0.99 070	9.99 775	10	129.0	128.5	128.3	128.1	127.9
51	9.00 828	123	9.01 055	124	0.98 945	9.99 773	9	131.6	131.1	130.9	130.7	130.5
52	9.00 951	123	9.01 179	124	0.98 821	9.99 772	8	134.2	133.7	133.5	133.3	133.1
53	9.01 074	122	9.01 303	124	0.98 697	9.99 771	7	136.8	136.3	136.1	135.9	135.7
54	9.01 196	122	9.01 427	123	0.98 573	9.99 769	6	139.4	138.9	138.7	138.5	138.3
55	9.01 318	122	9.01 550	123	0.98 450	9.99 768	5	142.0	141.5	141.3	141.1	140.9
56	9.01 440	121	9.01 673	123	0.98 327	9.99 767	4	144.6	144.1	143.9	143.7	143.5
57	9.01 561	121	9.01 796	122	0.98 204	9.99 765	3	147.2	146.7	146.5	146.3	146.1
58	9.01 682	121	9.01 918	122	0.98 082	9.99 764	2	149.8	149.3	149.1	148.9	148.7
59	9.01 803	120	9.02 040	122	0.97 960	9.99 763	1	152.4	151.9	151.7	151.5	151.3
60	9.01 923	120	9.02 162	122	0.97 838	9.99 761	0	155.0	154.5	154.3	154.1	153.9

	L Sin	d	L Tan	e d	L Cot	L Cos		P P			
0	9.01 923		9.02 162		0.97 838	9.99 761	60				
1	9.02 043	120	9.02 283	121	0.97 717	9.99 760	59	121	120	119	118
2	9.02 163	120	9.02 404	121	0.97 596	9.99 759	58	1	2.0	2.0	2.0
3	9.02 283	120	9.02 525	121	0.97 475	9.99 757	57	2	4.0	4.0	4.0
4	9.02 402	119	9.02 645	120	0.97 355	9.99 756	56	3	6.0	6.0	6.0
5	9.02 520	118	9.02 766	121	0.97 234	9.99 755	55	4	8.1	8.0	7.9
6	9.02 639	119	9.02 885	119	0.97 115	9.99 753	54	5	10.1	10.0	9.9
7	9.02 757	118	9.03 005	120	0.96 995	9.99 752	53	6	12.1	12.0	11.9
8	9.02 874	117	9.03 124	119	0.96 876	9.99 751	52	7	14.1	14.0	13.9
9	9.02 992	118	9.03 242	118	0.96 758	9.99 749	51	8	16.1	16.0	15.9
10	9.03 109	117	9.03 361	119	0.96 639	9.99 748	50	9	18.2	18.0	17.8
11	9.03 226	117	9.03 479	118	0.96 521	9.99 747	49	10	20.2	20.0	19.8
12	9.03 342	116	9.03 597	118	0.96 403	9.99 745	48	20	40.3	40.0	39.7
13	9.03 458	116	9.03 714	117	0.96 286	9.99 744	47	30	60.5	60.0	59.5
14	9.03 574	116	9.03 832	118	0.96 168	9.99 742	46	40	80.7	80.0	79.3
15	9.03 690	116	9.03 948	116	0.96 052	9.99 741	45	50	100.8	100.0	99.2
16	9.03 805	115	9.04 065	117	0.95 935	9.99 740	44				
17	9.03 920	115	9.04 181	116	0.95 819	9.99 738	43	117	116	115	114
18	9.04 034	114	9.04 297	116	0.95 703	9.99 737	42	1	2.0	1.9	1.9
19	9.04 149	115	9.04 413	116	0.95 587	9.99 736	41	2	3.9	3.9	3.8
20	9.04 262	113	9.04 528	115	0.95 472	9.99 734	40	3	5.8	5.8	5.8
21	9.04 376	114	9.04 643	115	0.95 357	9.99 733	39	4	7.8	7.7	7.7
22	9.04 490	114	9.04 758	115	0.95 242	9.99 731	38	5	9.8	9.7	9.6
23	9.04 603	113	9.04 873	115	0.95 127	9.99 730	37	6	11.7	11.6	11.5
24	9.04 715	112	9.04 987	114	0.95 013	9.99 728	36	7	13.6	13.5	13.4
25	9.04 828	113	9.05 101	114	0.94 899	9.99 727	35	8	15.6	15.5	15.3
26	9.04 940	112	9.05 214	113	0.94 786	9.99 726	34	9	17.6	17.4	17.2
27	9.05 052	112	9.05 328	114	0.94 672	9.99 724	33	10	19.5	19.3	19.2
28	9.05 164	112	9.05 441	113	0.94 559	9.99 723	32	20	39.0	38.7	38.3
29	9.05 275	111	9.05 553	112	0.94 447	9.99 721	31	30	58.5	58.0	57.5
30	9.05 386	111	9.05 666	113	0.94 334	9.99 720	30	40	78.0	77.3	76.7
31	9.05 497	111	9.05 778	112	0.94 222	9.99 718	29	50	97.5	96.7	95.8
32	9.05 607	110	9.05 890	112	0.94 110	9.99 717	28				
33	9.05 717	110	9.06 002	112	0.93 998	9.99 716	27	113	112	111	110
34	9.05 827	110	9.06 113	111	0.93 887	9.99 714	26	1	1.9	1.9	1.8
35	9.05 937	110	9.06 224	111	0.93 776	9.99 713	25	2	3.8	3.7	3.7
36	9.06 046	109	9.06 335	111	0.93 665	9.99 711	24	3	5.6	5.6	5.6
37	9.06 155	109	9.06 445	110	0.93 555	9.99 710	23	4	7.5	7.5	7.4
38	9.06 264	109	9.06 556	111	0.93 444	9.99 708	22	5	9.4	9.3	9.2
39	9.06 372	108	9.06 666	110	0.93 334	9.99 707	21	6	11.3	11.2	11.1
40	9.06 481	108	9.06 775	109	0.93 225	9.99 705	20	7	13.2	13.1	13.0
41	9.06 589	108	9.06 885	110	0.93 115	9.99 704	19	8	15.1	14.9	14.8
42	9.06 696	107	9.06 994	109	0.93 006	9.99 702	18	9	17.0	16.8	16.6
43	9.06 804	107	9.07 103	108	0.92 897	9.99 701	17	10	18.8	18.7	18.5
44	9.06 911	107	9.07 211	109	0.92 789	9.99 699	16	20	37.7	37.3	37.0
45	9.07 018	106	9.07 320	108	0.92 680	9.99 698	15	30	56.5	56.0	55.5
46	9.07 124	107	9.07 428	108	0.92 572	9.99 696	14	40	75.3	74.7	74.0
47	9.07 231	106	9.07 536	108	0.92 464	9.99 695	13	50	94.2	93.3	92.5
48	9.07 337	106	9.07 643	107	0.92 357	9.99 693	12				
49	9.07 442	105	9.07 751	108	0.92 249	9.99 692	11	109	108	107	106
50	9.07 548	106	9.07 858	107	0.92 142	9.99 690	10	1	1.8	1.8	1.8
51	9.07 653	105	9.07 964	106	0.92 036	9.99 689	9	2	3.6	3.6	3.6
52	9.07 758	105	9.08 071	107	0.91 929	9.99 687	8	3	5.4	5.4	5.4
53	9.07 863	105	9.08 177	106	0.91 823	9.99 686	7	4	7.3	7.2	7.1
54	9.07 968	104	9.08 283	106	0.91 717	9.99 684	6	5	9.1	9.0	8.9
55	9.08 072	104	9.08 389	106	0.91 611	9.99 683	5	6	10.9	10.8	10.7
56	9.08 176	104	9.08 495	105	0.91 505	9.99 681	4	7	12.7	12.6	12.5
57	9.08 280	103	9.08 600	105	0.91 400	9.99 680	3	8	14.5	14.4	14.3
58	9.08 383	103	9.08 705	105	0.91 295	9.99 678	2	9	16.4	16.2	16.0
59	9.08 486	103	9.08 810	105	0.91 190	9.99 677	1	10	18.2	18.0	17.8
60	9.08 589	103	9.08 914	104	0.91 086	9.99 675	0	20	36.3	36.0	35.7
	L Cos	d	L Cot	e d	L Tan	L Sin		30	54.5	54.0	53.5
								40	72.7	72.0	71.3
								50	90.8	90.0	89.2

	L Sin	d	L Tan	c d	L Cot	L Cos		P P					
0	9.08 589	103	9.08 914	105	0.91 086	9.99 675	60						
1	9.08 692	103	9.09 019	104	0.90 981	9.99 674	59	106	104	103	102		
2	9.08 795	102	9.09 123	104	0.90 877	9.99 672	58	1	1.8	1.7	1.7	1.7	
3	9.08 897	102	9.09 227	103	0.90 773	9.99 670	57	2	3.5	3.5	3.4	3.4	
4	9.08 999	102	9.09 330	104	0.90 670	9.99 669	56	3	5.2	5.2	5.2	5.1	
5	9.09 101	101	9.09 434	103	0.90 566	9.99 667	55	4	7.0	6.9	6.9	6.8	
6	9.09 202	102	9.09 537	103	0.90 463	9.99 666	54	5	8.8	8.7	8.6	8.5	
7	9.09 304	101	9.09 640	102	0.90 360	9.99 664	53	6	10.5	10.4	10.3	10.2	
8	9.09 405	101	9.09 742	103	0.90 258	9.99 663	52	7	12.2	12.1	12.0	11.9	
9	9.09 506	100	9.09 845	102	0.90 155	9.99 661	51	8	14.0	13.9	13.7	13.6	
10	9.09 606	101	9.09 947	102	0.90 053	9.99 659	50	9	15.8	15.6	15.4	15.3	
11	9.09 707	100	9.10 049	101	0.89 951	9.99 658	49	10	17.5	17.3	17.2	17.0	
12	9.09 807	100	9.10 150	102	0.89 850	9.99 656	48	20	35.0	34.7	34.3	34.0	
13	9.09 907	99	9.10 252	101	0.89 748	9.99 655	47	30	52.5	52.0	51.5	51.0	
14	9.10 006	100	9.10 353	101	0.89 647	9.99 653	46	40	70.0	69.3	68.7	68.0	
15	9.10 106	99	9.10 454	101	0.89 546	9.99 651	45	50	87.5	86.7	85.8	85.0	
16	9.10 205	99	9.10 555	101	0.89 445	9.99 650	44		101	100	99	98	
17	9.10 304	98	9.10 656	100	0.89 344	9.99 648	43	1	1.7	1.7	1.6	1.6	
18	9.10 402	99	9.10 756	100	0.89 244	9.99 647	42	2	3.4	3.3	3.3	3.3	
19	9.10 501	98	9.10 856	100	0.89 144	9.99 645	41	3	5.0	5.0	5.0	4.9	
20	9.10 599	98	9.10 956	100	0.89 044	9.99 643	40	4	6.7	6.7	6.6	6.5	
21	9.10 697	98	9.11 056	99	0.88 944	9.99 642	39	5	8.4	8.3	8.2	8.2	
22	9.10 795	98	9.11 155	99	0.88 845	9.99 640	38	6	10.1	10.0	9.9	9.8	
23	9.10 893	97	9.11 254	99	0.88 746	9.99 638	37	7	11.8	11.7	11.6	11.4	
24	9.10 990	97	9.11 353	99	0.88 647	9.99 637	36	8	13.5	13.3	13.2	13.1	
25	9.11 087	97	9.11 452	99	0.88 548	9.99 635	35	9	15.2	15.0	14.8	14.7	
26	9.11 184	97	9.11 551	99	0.88 449	9.99 633	34	10	16.8	16.7	16.5	16.3	
27	9.11 281	96	9.11 649	98	0.88 351	9.99 632	33	20	33.7	33.3	33.0	32.7	
28	9.11 377	97	9.11 747	98	0.88 253	9.99 630	32	30	50.5	50.0	49.5	49.0	
29	9.11 474	96	9.11 845	98	0.88 155	9.99 629	31	40	67.3	66.7	66.0	65.3	
30	9.11 570	96	9.11 943	98	0.88 057	9.99 627	30	50	84.2	83.3	82.5	81.7	
31	9.11 666	95	9.12 040	97	0.87 960	9.99 625	29		97	96	95	94	
32	9.11 761	96	9.12 138	98	0.87 862	9.99 624	28	1	1.6	1.6	1.6	1.6	
33	9.11 857	95	9.12 235	97	0.87 765	9.99 622	27	2	3.2	3.2	3.2	3.1	
34	9.11 952	95	9.12 332	97	0.87 668	9.99 620	26	3	4.8	4.8	4.8	4.7	
35	9.12 047	95	9.12 428	96	0.87 572	9.99 618	25	4	6.5	6.4	6.3	6.3	
36	9.12 142	95	9.12 525	97	0.87 475	9.99 617	24	5	8.1	8.0	7.9	7.8	
37	9.12 236	94	9.12 621	96	0.87 379	9.99 615	23	6	9.7	9.6	9.5	9.4	
38	9.12 331	95	9.12 717	96	0.87 283	9.99 613	22	7	11.3	11.2	11.1	11.0	
39	9.12 425	94	9.12 813	96	0.87 187	9.99 612	21	8	12.9	12.8	12.7	12.5	
40	9.12 519	94	9.12 909	96	0.87 091	9.99 610	20	9	14.6	14.4	14.2	14.1	
41	9.12 612	93	9.13 004	95	0.86 996	9.99 608	19	10	16.2	16.0	15.8	15.7	
42	9.12 706	94	9.13 099	95	0.86 901	9.99 607	18	20	32.3	32.0	31.7	31.3	
43	9.12 799	93	9.13 194	95	0.86 806	9.99 605	17	30	48.5	48.0	47.5	47.0	
44	9.12 892	93	9.13 289	95	0.86 711	9.99 603	16	40	64.7	64.0	63.3	62.7	
45	9.12 985	93	9.13 384	95	0.86 616	9.99 601	15	50	80.8	80.0	79.2	78.3	
46	9.13 078	93	9.13 478	94	0.86 522	9.99 600	14		93	92	91	90	
47	9.13 171	93	9.13 573	95	0.86 427	9.99 598	13	1	1.6	1.5	1.5	1.5	
48	9.13 263	92	9.13 667	94	0.86 333	9.99 596	12	2	3.1	3.1	3.0	3.0	
49	9.13 355	92	9.13 761	94	0.86 239	9.99 595	11	3	4.6	4.6	4.6	4.5	
50	9.13 447	92	9.13 854	93	0.86 146	9.99 593	10	4	6.2	6.1	6.1	6.0	
51	9.13 539	92	9.13 948	94	0.86 052	9.99 591	9	5	7.8	7.7	7.6	7.5	
52	9.13 630	91	9.14 041	93	0.85 959	9.99 589	8	6	9.3	9.2	9.1	9.0	
53	9.13 722	92	9.14 134	93	0.85 866	9.99 588	7	7	10.8	10.7	10.6	10.5	
54	9.13 813	91	9.14 227	93	0.85 773	9.99 586	6	8	12.4	12.3	12.1	12.0	
55	9.13 904	91	9.14 320	93	0.85 680	9.99 584	5	9	14.0	13.8	13.6	13.5	
56	9.13 994	90	9.14 412	92	0.85 588	9.99 582	4	10	15.5	15.3	15.2	15.0	
57	9.14 085	91	9.14 504	92	0.85 496	9.99 581	3	20	31.0	30.7	30.3	30.0	
58	9.14 175	90	9.14 597	93	0.85 403	9.99 579	2	30	46.5	46.0	45.5	45.0	
59	9.14 266	91	9.14 688	91	0.85 312	9.99 577	1	40	62.0	61.3	60.7	60.0	
60	9.14 356	90	9.14 780	92	0.85 220	9.99 575	0	50	77.5	76.7	75.8	75.0	
	L Cos	d	L Cot	c d	L Tan	L Sin		P P					

	L Sin	d	L Tan	e d	L Cot	L Cos		P P		
0	9.14 356	89	9.14 780	92	0.85 220	9.99 575	60	92	91	90
1	9.14 445	90	9.14 872	91	0.85 128	9.99 574	59	1	1.5	1.5
2	9.14 535	89	9.14 963	91	0.85 037	9.99 572	58	2	3.1	3.0
3	9.14 624	90	9.15 054	91	0.84 946	9.99 570	57	3	4.6	4.6
4	9.14 714	89	9.15 145	91	0.84 855	9.99 568	56	4	6.1	6.1
5	9.14 803	88	9.15 236	91	0.84 764	9.99 566	55	5	7.7	7.6
6	9.14 891	89	9.15 327	90	0.84 673	9.99 565	54	6	9.2	9.1
7	9.14 980	89	9.15 417	91	0.84 583	9.99 563	53	7	10.7	10.6
8	9.15 069	88	9.15 508	90	0.84 492	9.99 561	52	8	12.3	12.1
9	9.15 157	88	9.15 598	90	0.84 402	9.99 559	51	9	13.8	13.6
10	9.15 245	88	9.15 688	89	0.84 312	9.99 557	50	10	15.3	15.2
11	9.15 333	88	9.15 777	90	0.84 223	9.99 556	49	20	30.7	30.3
12	9.15 421	87	9.15 867	89	0.84 133	9.99 554	48	30	46.0	45.5
13	9.15 508	88	9.15 956	90	0.84 044	9.99 552	47	40	61.3	60.7
14	9.15 596	87	9.16 046	89	0.83 954	9.99 550	46	50	76.7	75.8
15	9.15 683	87	9.16 135	89	0.83 865	9.99 548	45		89	88
16	9.15 770	87	9.16 224	88	0.83 776	9.99 546	44	1	1.5	1.5
17	9.15 857	87	9.16 312	89	0.83 688	9.99 545	43	2	3.0	2.9
18	9.15 944	86	9.16 401	88	0.83 599	9.99 543	42	3	4.4	4.4
19	9.16 030	86	9.16 489	88	0.83 511	9.99 541	41	4	5.9	5.9
20	9.16 116	87	9.16 577	88	0.83 423	9.99 539	40	5	7.4	7.3
21	9.16 203	86	9.16 665	88	0.83 335	9.99 537	39	6	8.9	8.8
22	9.16 289	85	9.16 753	88	0.83 247	9.99 535	38	7	10.4	10.3
23	9.16 374	86	9.16 841	87	0.83 159	9.99 533	37	8	11.9	11.7
24	9.16 460	85	9.16 928	88	0.83 072	9.99 532	36	9	13.4	13.2
25	9.16 545	86	9.17 016	87	0.82 984	9.99 530	35	10	14.8	14.7
26	9.16 631	85	9.17 103	87	0.82 897	9.99 528	34	20	29.7	29.3
27	9.16 716	85	9.17 190	87	0.82 810	9.99 526	33	30	44.5	44.0
28	9.16 801	85	9.17 277	86	0.82 723	9.99 524	32	40	59.3	58.7
29	9.16 886	84	9.17 363	87	0.82 637	9.99 522	31	50	74.2	73.3
30	9.16 970	85	9.17 450	86	0.82 550	9.99 520	30		86	85
31	9.17 055	84	9.17 536	86	0.82 464	9.99 518	29	1	1.4	1.4
32	9.17 139	84	9.17 622	86	0.82 378	9.99 517	28	2	2.9	2.8
33	9.17 223	84	9.17 708	86	0.82 292	9.99 515	27	3	4.3	4.2
34	9.17 307	84	9.17 794	86	0.82 206	9.99 513	26	4	5.7	5.7
35	9.17 391	83	9.17 880	85	0.82 120	9.99 511	25	5	7.2	7.1
36	9.17 474	84	9.17 965	86	0.82 035	9.99 509	24	6	8.6	8.5
37	9.17 558	83	9.18 051	85	0.81 949	9.99 507	23	7	10.0	9.9
38	9.17 641	83	9.18 136	85	0.81 864	9.99 505	22	8	11.5	11.3
39	9.17 724	83	9.18 221	85	0.81 779	9.99 503	21	9	12.9	12.8
40	9.17 807	83	9.18 306	85	0.81 694	9.99 501	20	10	14.3	14.2
41	9.17 890	83	9.18 391	84	0.81 609	9.99 499	19	20	28.7	28.3
42	9.17 973	82	9.18 475	85	0.81 525	9.99 497	18	30	43.0	42.5
43	9.18 055	82	9.18 560	84	0.81 440	9.99 495	17	40	57.3	56.7
44	9.18 137	83	9.18 644	84	0.81 356	9.99 494	16	50	71.7	70.8
45	9.18 220	82	9.18 728	84	0.81 272	9.99 492	15		83	82
46	9.18 302	81	9.18 812	84	0.81 188	9.99 490	14	1	1.4	1.4
47	9.18 383	82	9.18 896	83	0.81 104	9.99 488	13	2	2.8	2.7
48	9.18 465	82	9.18 979	84	0.81 021	9.99 486	12	3	4.2	4.1
49	9.18 547	81	9.19 063	83	0.80 937	9.99 484	11	4	5.5	5.5
50	9.18 628	81	9.19 146	83	0.80 854	9.99 482	10	5	6.9	6.8
51	9.18 709	81	9.19 229	83	0.80 771	9.99 480	9	6	8.3	8.2
52	9.18 790	81	9.19 312	83	0.80 688	9.99 478	8	7	9.7	9.6
53	9.18 871	81	9.19 395	83	0.80 605	9.99 476	7	8	11.1	10.9
54	9.18 952	81	9.19 478	83	0.80 522	9.99 474	6	9	12.4	12.3
55	9.19 033	80	9.19 561	82	0.80 439	9.99 472	5	10	13.8	13.7
56	9.19 113	80	9.19 643	82	0.80 357	9.99 470	4	20	27.7	27.3
57	9.19 193	80	9.19 725	82	0.80 275	9.99 468	3	30	41.5	41.0
58	9.19 273	80	9.19 807	82	0.80 193	9.99 466	2	40	55.3	54.7
59	9.19 353	80	9.19 889	82	0.80 111	9.99 464	1	50	69.2	68.3
60	9.19 433		9.19 971		0.80 029	9.99 462	0			
	L Cos	d	L Cot	e d	L Tan	L Sin		P P		

0	L Sin	d	L Tan	c d	L Cot	L Cos	P P						
0	9.19 433	80	9.19 971		0.80 029	9.99 462	60						
1	9.19 513	79	9.20 053	82	0.79 947	9.99 460	59						
2	9.19 592	80	9.20 134	81	0.79 866	9.99 458	58						
3	9.19 672	79	9.20 216	82	0.79 784	9.99 456	57	1	80	79	78	77	
4	9.19 751	79	9.20 297	81	0.79 703	9.99 454	56	2	1.3	1.3	1.3	1.3	
5	9.19 830	79	9.20 378	81	0.79 622	9.99 452	55	3	2.7	2.6	2.6	2.6	
6	9.19 909	79	9.20 459	81	0.79 541	9.99 450	54	4	4.0	4.0	3.9	3.8	
7	9.19 988	79	9.20 540	81	0.79 460	9.99 448	53	5	5.3	5.3	5.2	5.1	
8	9.20 067	78	9.20 621	81	0.79 379	9.99 446	52	6	6.7	6.6	6.5	6.4	
9	9.20 145	78	9.20 701	80	0.79 299	9.99 444	51	7	8.0	7.9	7.8	7.7	
10	9.20 223	79	9.20 782	81	0.79 218	9.99 442	50	8	9.3	9.2	9.1	9.0	
11	9.20 302	78	9.20 862	80	0.79 138	9.99 440	49	9	10.7	10.5	10.4	10.3	
12	9.20 380	78	9.20 942	80	0.79 058	9.99 438	48	10	12.0	11.8	11.7	11.6	
13	9.20 458	77	9.21 022	80	0.78 978	9.99 436	47	20	13.3	13.2	13.0	12.8	
14	9.20 535	78	9.21 102	80	0.78 898	9.99 434	46	30	26.7	26.3	26.0	25.7	
15	9.20 613	78	9.21 182	80	0.78 818	9.99 432	45	40	40.0	39.5	39.0	38.5	
16	9.20 691	77	9.21 261	79	0.78 739	9.99 429	44	50	53.3	52.7	52.0	51.3	
17	9.20 768	77	9.21 341	80	0.78 659	9.99 427	43		66.7	65.8	65.0	64.2	
18	9.20 845	77	9.21 420	79	0.78 580	9.99 425	42						
19	9.20 922	77	9.21 499	79	0.78 501	9.99 423	41						
20	9.20 999	77	9.21 578	79	0.78 422	9.99 421	40						
21	9.21 076	77	9.21 657	79	0.78 343	9.99 419	39						
22	9.21 153	76	9.21 736	78	0.78 264	9.99 417	38						
23	9.21 229	77	9.21 814	79	0.78 186	9.99 415	37						
24	9.21 306	76	9.21 893	78	0.78 107	9.99 413	36						
25	9.21 382	76	9.21 971	78	0.78 029	9.99 411	35						
26	9.21 458	76	9.22 049	78	0.77 951	9.99 409	34						
27	9.21 534	76	9.22 127	78	0.77 873	9.99 407	33						
28	9.21 610	75	9.22 205	78	0.77 795	9.99 404	32						
29	9.21 685	76	9.22 283	78	0.77 717	9.99 402	31						
30	9.21 761	75	9.22 361	77	0.77 639	9.99 400	30						
31	9.21 836	76	9.22 438	78	0.77 562	9.99 398	29						
32	9.21 912	75	9.22 516	77	0.77 484	9.99 396	28						
33	9.21 987	75	9.22 593	77	0.77 407	9.99 394	27						
34	9.22 062	75	9.22 670	77	0.77 330	9.99 392	26						
35	9.22 137	75	9.22 747	77	0.77 253	9.99 390	25						
36	9.22 211	74	9.22 824	77	0.77 176	9.99 388	24						
37	9.22 286	75	9.22 901	77	0.77 099	9.99 385	23						
38	9.22 361	75	9.22 977	76	0.77 023	9.99 383	22						
39	9.22 435	74	9.23 054	77	0.76 946	9.99 381	21						
40	9.22 509	74	9.23 130	76	0.76 870	9.99 379	20						
41	9.22 583	74	9.23 206	76	0.76 794	9.99 377	19						
42	9.22 657	74	9.23 283	77	0.76 717	9.99 375	18						
43	9.22 731	74	9.23 359	76	0.76 641	9.99 372	17						
44	9.22 805	74	9.23 435	76	0.76 565	9.99 370	16						
45	9.22 878	73	9.23 510	75	0.76 490	9.99 368	15						
46	9.22 952	74	9.23 586	76	0.76 414	9.99 366	14						
47	9.23 025	73	9.23 661	75	0.76 339	9.99 364	13						
48	9.23 098	73	9.23 737	76	0.76 263	9.99 362	12						
49	9.23 171	73	9.23 812	75	0.76 188	9.99 359	11						
50	9.23 244	73	9.23 887	75	0.76 113	9.99 357	10						
51	9.23 317	73	9.23 962	75	0.76 038	9.99 355	9						
52	9.23 390	73	9.24 037	75	0.75 963	9.99 353	8						
53	9.23 462	72	9.24 112	75	0.75 888	9.99 351	7						
54	9.23 535	73	9.24 186	74	0.75 814	9.99 348	6						
55	9.23 607	72	9.24 261	75	0.75 739	9.99 346	5						
56	9.23 679	72	9.24 335	74	0.75 665	9.99 344	4						
57	9.23 752	73	9.24 410	75	0.75 590	9.99 342	3						
58	9.23 823	71	9.24 484	74	0.75 516	9.99 340	2						
59	9.23 895	72	9.24 558	74	0.75 442	9.99 337	1						
60	9.23 967	72	9.24 632	74	0.75 368	9.99 335	0						
	L Cos	d	L Cot	c d	L Tan	L Sin							

	L Sin	d	L Tan	cd	L Cot	L Cos	d		P	P		
0	9.23 967	72	9.24 632	74	0.75 368	9.99 335	2	60	74	73	72	
1	9.24 039	71	9.24 706	73	0.75 294	9.99 333	2	59	1	1.2	1.2	1.2
2	9.24 110	71	9.24 779	74	0.75 221	9.99 331	3	58	2	2.5	2.4	2.4
3	9.24 181	72	9.24 853	73	0.75 147	9.99 328	2	57	3	3.7	3.6	3.6
4	9.24 253	71	9.24 926	74	0.75 074	9.99 326	2	56	4	4.9	4.9	4.8
5	9.24 324	71	9.25 000	73	0.75 000	9.99 324	2	55	5	6.2	6.1	6.0
6	9.24 395	71	9.25 073	73	0.74 927	9.99 322	3	54	6	7.4	7.3	7.2
7	9.24 466	70	9.25 146	73	0.74 854	9.99 319	2	53	7	8.6	8.5	8.4
8	9.24 536	71	9.25 219	73	0.74 781	9.99 317	2	52	8	9.9	9.7	9.6
9	9.24 607	70	9.25 292	73	0.74 708	9.99 315	2	51	9	11.1	11.0	10.8
10	9.24 677	71	9.25 365	72	0.74 635	9.99 313	3	50	10	12.3	12.2	12.0
11	9.24 748	70	9.25 437	73	0.74 563	9.99 310	2	49	20	24.7	24.3	24.0
12	9.24 818	70	9.25 510	72	0.74 490	9.99 308	2	48	30	37.0	36.5	36.0
13	9.24 888	70	9.25 582	73	0.74 418	9.99 306	2	47	40	49.3	48.7	48.0
14	9.24 958	70	9.25 655	72	0.74 345	9.99 304	3	46	50	61.7	60.8	60.0
15	9.25 028	70	9.25 727	72	0.74 273	9.99 301	2	45				
16	9.25 098	70	9.25 799	72	0.74 201	9.99 299	2	44	71	70	69	
17	9.25 168	69	9.25 871	72	0.74 129	9.99 297	3	43	1	1.2	1.2	1.2
18	9.25 237	70	9.25 943	72	0.74 057	9.99 294	2	42	2	2.4	2.3	2.3
19	9.25 307	69	9.26 015	71	0.73 985	9.99 292	2	41	3	3.6	3.5	3.4
20	9.25 376	69	9.26 086	72	0.73 914	9.99 290	2	40	4	4.7	4.7	4.6
21	9.25 445	69	9.26 158	71	0.73 842	9.99 288	3	39	5	5.9	5.8	5.8
22	9.25 514	69	9.26 229	72	0.73 771	9.99 285	2	38	6	7.1	7.0	6.9
23	9.25 583	69	9.26 301	71	0.73 699	9.99 283	2	37	7	8.3	8.2	8.0
24	9.25 652	69	9.26 372	71	0.73 628	9.99 281	3	36	8	9.5	9.3	9.2
25	9.25 721	69	9.26 443	71	0.73 557	9.99 278	2	35	9	10.6	10.5	10.4
26	9.25 790	68	9.26 514	71	0.73 486	9.99 276	2	34	10	11.8	11.7	11.5
27	9.25 858	69	9.26 585	70	0.73 415	9.99 274	3	33	20	23.7	23.3	23.0
28	9.25 927	68	9.26 655	71	0.73 345	9.99 271	2	32	30	35.5	35.0	34.5
29	9.25 995	68	9.26 726	71	0.73 274	9.99 269	2	31	40	47.3	46.7	46.0
30	9.26 063	68	9.26 797	70	0.73 203	9.99 267	3	30	50	59.2	58.3	57.5
31	9.26 131	68	9.26 867	70	0.73 133	9.99 264	2	29				
32	9.26 199	68	9.26 937	71	0.73 063	9.99 262	2	28	68	67	66	
33	9.26 267	68	9.27 008	70	0.72 992	9.99 260	3	27	1	1.1	1.1	1.1
34	9.26 335	68	9.27 078	70	0.72 922	9.99 257	2	26	2	2.3	2.2	2.2
35	9.26 403	67	9.27 148	70	0.72 852	9.99 255	3	25	3	3.4	3.4	3.3
36	9.26 470	68	9.27 218	70	0.72 782	9.99 252	3	24	4	4.5	4.5	4.4
37	9.26 538	67	9.27 288	69	0.72 712	9.99 250	2	23	5	5.7	5.6	5.5
38	9.26 605	67	9.27 357	70	0.72 643	9.99 248	3	22	6	6.8	6.7	6.6
39	9.26 672	67	9.27 427	69	0.72 573	9.99 245	2	21	7	7.9	7.8	7.7
40	9.26 739	67	9.27 496	70	0.72 504	9.99 243	3	20	8	9.1	8.9	8.8
41	9.26 806	67	9.27 566	69	0.72 434	9.99 241	2	19	9	10.2	10.0	9.9
42	9.26 873	67	9.27 635	69	0.72 365	9.99 238	3	18	10	11.3	11.2	11.0
43	9.26 940	67	9.27 704	69	0.72 296	9.99 236	2	17	20	22.7	22.3	22.0
44	9.27 007	66	9.27 773	69	0.72 227	9.99 233	3	16	30	34.0	33.5	33.0
45	9.27 073	67	9.27 842	69	0.72 158	9.99 231	2	15	40	45.3	44.7	44.0
46	9.27 140	66	9.27 911	69	0.72 089	9.99 229	2	14	50	56.7	55.8	55.0
47	9.27 206	67	9.27 980	69	0.72 020	9.99 226	3	13				
48	9.27 273	66	9.28 049	68	0.71 951	9.99 224	2	12	3	3	3	3
49	9.27 339	66	9.28 117	69	0.71 883	9.99 221	3	11	74	73	72	
50	9.27 405	66	9.28 186	68	0.71 814	9.99 219	2	10	0	12.3	12.2	12.0
51	9.27 471	66	9.28 254	69	0.71 746	9.99 217	3	9	1	37.0	36.5	36.0
52	9.27 537	65	9.28 323	68	0.71 677	9.99 214	2	8	2	61.7	60.8	60.0
53	9.27 602	66	9.28 391	68	0.71 609	9.99 212	3	7	3			
54	9.27 668	66	9.28 459	68	0.71 541	9.99 209	2	6				
55	9.27 734	65	9.28 527	68	0.71 473	9.99 207	3	5	3	3	3	3
56	9.27 799	65	9.28 595	67	0.71 405	9.99 204	2	4	71	70	69	68
57	9.27 864	66	9.28 662	68	0.71 338	9.99 202	3	3	0	11.8	11.7	11.5
58	9.27 930	65	9.28 730	68	0.71 270	9.99 200	2	2	1	35.5	35.0	34.5
59	9.27 995	65	9.28 798	67	0.71 202	9.99 197	3	1	2	59.2	58.3	57.5
60	9.28 060		9.28 865		0.71 135	9.99 195	2	0	3			

L Sin	d	L Tan	ed	L Cot	L Cos	d	P P					
0	0.25 060	65	0.25 865	68	0.71 135	9.99 195	(0)					
1	0.25 125	65	0.25 933	67	0.71 067	9.99 192	3	59	65	64	63	
2	0.25 190	64	0.29 000	67	0.71 000	9.99 190	2	58	1	1.1	1.1	1.0
3	0.25 254	65	0.29 067	67	0.70 933	9.99 187	3	57	2	2.2	2.1	2.1
4	0.25 319	65	0.29 134	67	0.70 866	9.99 185	2	56	3	3.2	3.2	3.2
5	0.25 384	64	0.29 201	67	0.70 799	9.99 182	3	55	4	4.3	4.3	4.2
6	0.25 448	64	0.29 268	67	0.70 732	9.99 180	2	54	5	5.4	5.3	5.2
7	0.25 512	65	0.29 335	67	0.70 665	9.99 177	3	53	6	6.5	6.4	6.3
8	0.25 577	64	0.29 402	66	0.70 598	9.99 175	2	52	7	7.6	7.5	7.4
9	0.25 641	64	0.29 468	67	0.70 532	9.99 172	3	51	8	8.7	8.5	8.4
10	0.25 705	64	0.29 535	66	0.70 465	9.99 170	2	50	9	9.8	9.6	9.4
11	0.25 769	64	0.29 601	67	0.70 399	9.99 167	3	49	10	10.8	10.7	10.5
12	0.25 833	63	0.29 668	66	0.70 332	9.99 165	2	48	20	21.7	21.3	21.0
13	0.25 896	64	0.29 734	66	0.70 266	9.99 162	3	47	30	32.5	32.0	31.5
14	0.25 960	64	0.29 800	66	0.70 200	9.99 160	2	46	40	43.3	42.7	42.0
15	0.29 024	63	0.29 866	66	0.70 134	9.99 157	3	45	50	54.2	53.3	52.5
16	0.29 087	63	0.29 932	66	0.70 068	9.99 155	2	44				
17	0.29 150	64	0.29 998	66	0.70 002	9.99 152	3	43		62	61	60
18	0.29 214	63	0.30 064	66	0.69 936	9.99 150	2	42	1	1.0	1.0	1.0
19	0.29 277	63	0.30 130	66	0.69 870	9.99 147	3	41	2	2.1	2.0	2.0
20	0.29 340	63	0.30 195	65	0.69 805	9.99 145	2	40	3	3.1	3.0	3.0
21	0.29 403	63	0.30 261	66	0.69 739	9.99 143	3	39	4	4.1	4.1	4.0
22	0.29 466	63	0.30 326	65	0.69 674	9.99 142	2	38	5	5.2	5.1	5.0
23	0.29 529	62	0.30 391	65	0.69 609	9.99 140	3	37	6	6.2	6.1	6.0
24	0.29 591	62	0.30 457	66	0.69 543	9.99 137	2	36	7	7.2	7.1	7.0
25	0.29 654	63	0.30 522	65	0.69 478	9.99 135	3	35	8	8.3	8.1	8.0
26	0.29 716	62	0.30 587	65	0.69 413	9.99 132	2	34	9	9.3	9.2	9.0
27	0.29 779	63	0.30 652	65	0.69 348	9.99 130	3	33	10	10.3	10.2	10.0
28	0.29 841	62	0.30 717	65	0.69 283	9.99 127	2	32	20	20.7	20.3	20.0
29	0.29 903	62	0.30 782	65	0.69 218	9.99 124	3	31	30	31.0	30.5	30.0
30	0.29 966	63	0.30 846	64	0.69 154	9.99 122	2	30	40	41.3	40.7	40.0
31	0.30 028	62	0.30 911	65	0.69 089	9.99 119	3	29	50	51.7	50.8	50.0
32	0.30 090	62	0.30 975	64	0.69 025	9.99 117	2	28				
33	0.30 151	61	0.31 040	64	0.68 960	9.99 114	3	27		59	3	2
34	0.30 213	62	0.31 104	65	0.68 896	9.99 112	2	26	1	1.0	0.0	0.0
35	0.30 275	62	0.31 168	64	0.68 832	9.99 109	3	25	2	2.0	0.1	0.1
36	0.30 336	61	0.31 233	64	0.68 767	9.99 106	2	24	3	3.0	0.2	0.1
37	0.30 398	62	0.31 297	65	0.68 703	9.99 103	3	23	4	3.9	0.2	0.1
38	0.30 459	61	0.31 361	64	0.68 639	9.99 101	2	22	5	4.9	0.2	0.2
39	0.30 521	62	0.31 425	64	0.68 575	9.99 999	3	21	6	5.9	0.3	0.2
40	0.30 582	61	0.31 489	64	0.68 511	9.99 996	2	20	7	6.9	0.4	0.2
41	0.30 643	61	0.31 552	64	0.68 448	9.99 993	3	19	8	7.9	0.4	0.3
42	0.30 704	61	0.31 616	63	0.68 384	9.99 991	2	18	9	8.8	0.4	0.3
43	0.30 765	61	0.31 679	64	0.68 321	9.99 989	3	17	10	9.8	0.5	0.3
44	0.30 826	61	0.31 743	63	0.68 257	9.99 988	2	16	20	19.7	1.0	0.7
45	0.30 887	60	0.31 806	64	0.68 194	9.99 986	3	15	30	29.5	1.5	1.0
46	0.30 947	60	0.31 870	63	0.68 130	9.99 983	2	14	40	39.3	2.0	1.3
47	0.31 008	60	0.31 933	64	0.68 067	9.99 981	3	13	50	49.2	2.5	1.7
48	0.31 068	60	0.31 996	63	0.68 004	9.99 978	2	12				
49	0.31 129	61	0.32 059	63	0.67 941	9.99 975	3	11		3	3	3
50	0.31 189	60	0.32 122	63	0.67 878	9.99 972	2	10		67	66	65
51	0.31 250	61	0.32 185	63	0.67 815	9.99 970	3	9	0	11.2	11.0	10.8
52	0.31 310	60	0.32 248	63	0.67 752	9.99 967	2	8	1	33.5	33.0	32.5
53	0.31 370	60	0.32 311	63	0.67 689	9.99 964	3	7	2	55.8	55.0	54.2
54	0.31 430	60	0.32 373	62	0.67 627	9.99 962	2	6	3			
55	0.31 490	60	0.32 436	63	0.67 564	9.99 959	3	5		3	3	3
56	0.31 549	59	0.32 498	63	0.67 502	9.99 956	2	4		64	63	62
57	0.31 609	60	0.32 561	62	0.67 439	9.99 954	3	3	0	10.7	10.5	10.3
58	0.31 669	60	0.32 623	63	0.67 377	9.99 951	2	2	1	32.0	31.5	31.0
59	0.31 728	59	0.32 685	62	0.67 315	9.99 948	3	1	2	53.3	52.5	51.7
60	0.31 788	60	0.32 747	62	0.67 253	9.99 946	2	0	3			
	L Cos	d	L Cot	ed	L Tan	L Sin	d			P	P	

	L Sin	d	L Tan	ed	L Cot	L Cos	d		P P			
0	9.31 788		9.32 747		0.67 253	9.99 040		60				
1	9.31 847	59	9.32 810	63	0.67 190	9.99 038	2	59	63	62	61	
2	9.31 907	60	9.32 872	62	0.67 128	9.99 035	3	58	1	1.0	1.0	1.0
3	9.31 966	59	9.32 933	61	0.67 067	9.99 032	3	57	2	2.1	2.1	2.0
4	9.32 025	59	9.32 995	62	0.67 005	9.99 030	2	56	3	3.2	3.1	3.0
5	9.32 084	59	9.33 057	62	0.66 943	9.99 027	3	55	4	4.2	4.1	4.1
6	9.32 143	59	9.33 119	61	0.66 881	9.99 024	3	54	5	5.2	5.2	5.1
7	9.32 202	59	9.33 180	62	0.66 820	9.99 022	2	53	6	6.3	6.2	6.1
8	9.32 261	58	9.33 242	62	0.66 758	9.99 019	3	52	7	7.4	7.2	7.1
9	9.32 319	58	9.33 303	61	0.66 697	9.99 016	3	51	8	8.4	8.3	8.1
10	9.32 378	59	9.33 365	62	0.66 635	9.99 013	3	50	9	9.4	9.3	9.2
11	9.32 437	59	9.33 426	61	0.66 574	9.99 011	2	49	10	10.5	10.3	10.2
12	9.32 495	58	9.33 487	61	0.66 513	9.99 008	3	48	20	21.0	20.7	20.3
13	9.32 553	58	9.33 548	61	0.66 452	9.99 005	3	47	30	31.5	31.0	30.5
14	9.32 612	59	9.33 609	61	0.66 391	9.99 002	3	46	40	42.0	41.3	40.7
15	9.32 670	58	9.33 670	61	0.66 330	9.99 000	2	45	50	52.5	51.7	50.8
16	9.32 728	58	9.33 731	61	0.66 269	9.98 997	3	44		60	59	58
17	9.32 786	58	9.33 792	61	0.66 208	9.98 994	3	43	1	1.0	1.0	1.0
18	9.32 844	58	9.33 853	61	0.66 147	9.98 991	3	42	2	2.0	2.0	1.9
19	9.32 902	58	9.33 913	60	0.66 087	9.98 989	2	41	3	3.0	3.0	2.9
20	9.32 960	58	9.33 974	61	0.66 026	9.98 986	3	40	4	4.0	3.9	3.9
21	9.33 018	57	9.34 034	60	0.65 966	9.98 983	3	39	5	5.0	4.9	4.8
22	9.33 075	57	9.34 095	61	0.65 905	9.98 980	3	38	6	6.0	5.9	5.8
23	9.33 133	58	9.34 155	60	0.65 845	9.98 978	2	37	7	7.0	6.9	6.8
24	9.33 190	57	9.34 215	60	0.65 785	9.98 975	3	36	8	8.0	7.9	7.7
25	9.33 248	58	9.34 276	61	0.65 724	9.98 972	3	35	9	9.0	8.8	8.7
26	9.33 305	57	9.34 336	60	0.65 664	9.98 969	3	34	10	10.0	9.8	9.7
27	9.33 362	57	9.34 396	60	0.65 604	9.98 967	2	33	20	20.0	19.7	19.3
28	9.33 420	58	9.34 456	60	0.65 544	9.98 964	3	32	30	30.0	29.5	29.0
29	9.33 477	57	9.34 516	60	0.65 484	9.98 961	3	31	40	40.0	39.3	38.7
30	9.33 534	57	9.34 576	60	0.65 424	9.98 958	3	30	50	50.0	49.2	48.3
31	9.33 591	56	9.34 635	59	0.65 365	9.98 955	3	29		57	56	55
32	9.33 647	56	9.34 695	60	0.65 305	9.98 953	2	28	1	1.0	0.9	0.9
33	9.33 704	57	9.34 755	60	0.65 245	9.98 950	3	27	2	1.9	1.9	1.8
34	9.33 761	57	9.34 814	59	0.65 186	9.98 947	3	26	3	2.8	2.8	2.8
35	9.33 818	56	9.34 874	60	0.65 126	9.98 944	3	25	4	3.8	3.7	3.7
36	9.33 874	56	9.34 933	59	0.65 067	9.98 941	3	24	5	4.8	4.7	4.6
37	9.33 931	57	9.34 992	59	0.65 008	9.98 938	3	23	6	5.7	5.6	5.5
38	9.33 987	56	9.35 051	59	0.64 949	9.98 936	2	22	7	6.6	6.5	6.4
39	9.34 043	57	9.35 111	60	0.64 889	9.98 933	3	21	8	7.6	7.5	7.3
40	9.34 100	56	9.35 170	59	0.64 830	9.98 930	3	20	9	8.6	8.4	8.2
41	9.34 156	56	9.35 229	59	0.64 771	9.98 927	3	19	10	9.5	9.3	9.2
42	9.34 212	56	9.35 288	59	0.64 712	9.98 924	3	18	20	19.0	18.7	18.3
43	9.34 268	56	9.35 347	58	0.64 653	9.98 921	3	17	30	28.5	28.0	27.5
44	9.34 324	56	9.35 405	59	0.64 595	9.98 919	2	16	40	38.0	37.3	36.7
45	9.34 380	56	9.35 464	59	0.64 536	9.98 916	3	15	50	47.5	46.7	45.8
46	9.34 436	55	9.35 523	59	0.64 477	9.98 913	3	14				
47	9.34 491	55	9.35 581	58	0.64 419	9.98 910	3	13				
48	9.34 547	55	9.35 640	59	0.64 360	9.98 907	3	12				
49	9.34 602	55	9.35 698	58	0.64 302	9.98 904	3	11				
50	9.34 658	55	9.35 757	59	0.64 243	9.98 901	3	10				
51	9.34 713	55	9.35 815	58	0.64 185	9.98 898	3	9				
52	9.34 769	55	9.35 873	58	0.64 127	9.98 896	2	8				
53	9.34 824	55	9.35 931	58	0.64 069	9.98 893	3	7				
54	9.34 879	55	9.35 989	58	0.64 011	9.98 890	3	6				
55	9.34 934	55	9.36 047	58	0.63 953	9.98 887	3	5				
56	9.34 989	55	9.36 105	58	0.63 895	9.98 884	3	4				
57	9.35 044	55	9.36 163	58	0.63 837	9.98 881	3	3				
58	9.35 099	55	9.36 221	58	0.63 779	9.98 878	3	2				
59	9.35 154	55	9.36 279	58	0.63 721	9.98 875	3	1				
60	9.35 209	55	9.36 336	57	0.63 664	9.98 872	3	0				
	L Cos	d	L Cot	ed	L Tan	L Sin	d					

	L Sin	d	L Tan	e d	L Cot	L Cos	d		P P
0	9.35 209	54	9.36 336	58	0.63 664	9.98 872	3	60	57 56 55
1	9.35 263	55	9.36 394	58	0.63 606	9.98 869	3	59	1 1.0 0.9 0.9
2	9.35 318	55	9.36 452	57	0.63 548	9.98 867	2	58	2 1.9 1.9 1.8
3	9.35 373	54	9.36 509	57	0.63 491	9.98 864	3	57	3 2.8 2.8 2.8
4	9.35 427	54	9.36 566	58	0.63 434	9.98 861	3	56	4 3.8 3.7 3.7
5	9.35 481	55	9.36 624	57	0.63 376	9.98 858	3	55	5 4.8 4.7 4.6
6	9.35 536	54	9.36 681	57	0.63 319	9.98 855	3	54	6 5.7 5.6 5.5
7	9.35 590	54	9.36 738	57	0.63 262	9.98 852	3	53	7 6.6 6.5 6.4
8	9.35 644	54	9.36 795	57	0.63 205	9.98 849	3	52	8 7.6 7.5 7.3
9	9.35 698	54	9.36 852	57	0.63 148	9.98 846	3	51	9 8.6 8.4 8.2
10	9.35 752	54	9.36 909	57	0.63 091	9.98 843	3	50	10 9.5 9.3 9.2
11	9.35 806	54	9.36 966	57	0.63 034	9.98 840	3	49	20 19.0 18.7 18.3
12	9.35 860	54	9.37 023	57	0.62 977	9.98 837	3	48	30 28.5 28.0 27.5
13	9.35 914	54	9.37 080	57	0.62 920	9.98 834	3	47	40 38.0 37.3 36.7
14	9.35 968	54	9.37 137	56	0.62 863	9.98 831	3	46	50 47.5 46.7 45.8
15	9.36 022	53	9.37 193	57	0.62 807	9.98 828	3	45	54 53 52
16	9.36 075	54	9.37 250	56	0.62 750	9.98 825	3	44	1 0.9 0.9 0.9
17	9.36 129	53	9.37 306	57	0.62 694	9.98 822	3	43	2 1.8 1.8 1.7
18	9.36 182	54	9.37 363	56	0.62 637	9.98 819	3	42	3 2.7 2.6 2.6
19	9.36 236	53	9.37 419	57	0.62 581	9.98 816	3	41	4 3.6 3.5 3.5
20	9.36 289	53	9.37 476	56	0.62 524	9.98 813	3	40	5 4.5 4.4 4.3
21	9.36 342	53	9.37 532	56	0.62 468	9.98 810	3	39	6 5.4 5.3 5.2
22	9.36 395	54	9.37 588	56	0.62 412	9.98 807	3	38	7 6.3 6.2 6.1
23	9.36 449	53	9.37 644	56	0.62 356	9.98 804	3	37	8 7.2 7.1 6.9
24	9.36 502	53	9.37 700	56	0.62 300	9.98 801	3	36	9 8.1 8.0 7.8
25	9.36 555	53	9.37 756	56	0.62 244	9.98 798	3	35	10 9.0 8.8 8.7
26	9.36 608	52	9.37 812	56	0.62 188	9.98 795	3	34	20 18.0 17.7 17.3
27	9.36 660	53	9.37 868	56	0.62 132	9.98 792	3	33	30 27.0 26.5 26.0
28	9.36 713	53	9.37 924	56	0.62 076	9.98 789	3	32	40 36.0 35.3 34.7
29	9.36 766	53	9.37 980	56	0.62 020	9.98 786	3	31	50 45.0 44.2 43.3
30	9.36 819	52	9.38 035	55	0.61 965	9.98 783	3	30	51 4 3 2
31	9.36 871	53	9.38 091	56	0.61 909	9.98 780	3	29	1 0.8 0.1 0.0 0.0
32	9.36 924	52	9.38 147	55	0.61 853	9.98 777	3	28	2 1.7 0.1 0.1 0.1
33	9.36 976	52	9.38 202	55	0.61 798	9.98 774	3	27	3 2.6 0.2 0.2 0.1
34	9.37 028	53	9.38 257	56	0.61 743	9.98 771	3	26	4 3.4 0.3 0.2 0.1
35	9.37 081	52	9.38 313	55	0.61 687	9.98 768	3	25	5 4.2 0.3 0.2 0.2
36	9.37 133	52	9.38 368	55	0.61 632	9.98 765	3	24	6 5.1 0.4 0.3 0.2
37	9.37 185	52	9.38 423	56	0.61 577	9.98 762	3	23	7 6.0 0.5 0.4 0.2
38	9.37 237	52	9.38 479	55	0.61 521	9.98 759	3	22	8 6.8 0.5 0.4 0.3
39	9.37 289	52	9.38 534	55	0.61 466	9.98 756	3	21	9 7.6 0.6 0.4 0.3
40	9.37 341	52	9.38 589	55	0.61 411	9.98 753	3	20	10 8.5 0.7 0.5 0.3
41	9.37 393	52	9.38 644	55	0.61 356	9.98 750	3	19	20 17.0 1.3 1.0 0.7
42	9.37 445	52	9.38 699	55	0.61 301	9.98 746	4	18	30 25.5 2.0 1.5 1.0
43	9.37 497	52	9.38 754	54	0.61 246	9.98 743	3	17	40 34.0 2.7 2.0 1.3
44	9.37 549	52	9.38 808	55	0.61 192	9.98 740	3	16	50 42.5 3.3 2.5 1.7
45	9.37 600	51	9.38 863	55	0.61 137	9.98 737	3	15	
46	9.37 652	52	9.38 918	55	0.61 082	9.98 734	3	14	
47	9.37 703	51	9.38 972	54	0.61 028	9.98 731	3	13	
48	9.37 755	52	9.39 027	55	0.60 973	9.98 728	3	12	
49	9.37 806	51	9.39 082	55	0.60 918	9.98 725	3	11	
50	9.37 858	52	9.39 136	54	0.60 864	9.98 722	3	10	
51	9.37 909	51	9.39 190	54	0.60 810	9.98 719	3	9	
52	9.37 960	51	9.39 245	55	0.60 755	9.98 715	4	8	
53	9.38 011	51	9.39 299	54	0.60 701	9.98 712	3	7	
54	9.38 062	51	9.39 353	54	0.60 647	9.98 709	3	6	
55	9.38 113	51	9.39 407	54	0.60 593	9.98 706	3	5	
56	9.38 164	51	9.39 461	54	0.60 539	9.98 703	3	4	
57	9.38 215	51	9.39 515	54	0.60 485	9.98 700	3	3	
58	9.38 266	51	9.39 569	54	0.60 431	9.98 697	3	2	
59	9.38 317	51	9.39 623	54	0.60 377	9.98 694	3	1	
60	9.38 368	51	9.39 677	54	0.60 323	9.98 690	4	0	
	L Cos	d	L Cot	e d	L Tan	L Sin	d		P P

	L Sin	d	L Tan	cd	L Cot	L Cos	d		P	P
0	9.38 368	50	9.39 677	54	0.60 323	9.98 690	3	60		
1	9.38 418	51	9.39 731	54	0.60 209	9.98 687	3	59	54	53
2	9.38 469	50	9.39 785	53	0.60 215	9.98 684	3	58	1	0.9
3	9.38 519	51	9.39 838	54	0.60 162	9.98 681	3	57	2	1.8
4	9.38 570	50	9.39 892	53	0.60 108	9.98 678	3	56	3	2.7
5	9.38 620	50	9.39 945	54	0.60 055	9.98 675	3	55	4	3.6
6	9.38 670	51	9.39 999	53	0.60 001	9.98 671	4	54	5	4.5
7	9.38 721	50	9.40 052	54	0.59 948	9.98 668	3	53	6	5.4
8	9.38 771	50	9.40 106	53	0.59 894	9.98 665	3	52	7	6.3
9	9.38 821	50	9.40 159	53	0.59 841	9.98 662	3	51	8	7.2
10	9.38 871	50	9.40 212	54	0.59 788	9.98 659	3	50	9	8.1
11	9.38 921	50	9.40 266	53	0.59 734	9.98 656	3	49	10	9.0
12	9.38 971	50	9.40 319	53	0.59 681	9.98 652	4	48	20	18.0
13	9.39 021	50	9.40 372	53	0.59 628	9.98 649	3	47	30	27.0
14	9.39 071	50	9.40 425	53	0.59 575	9.98 646	3	46	40	36.0
15	9.39 121	49	9.40 478	53	0.59 522	9.98 643	3	45	50	45.0
16	9.39 170	50	9.40 531	53	0.59 469	9.98 640	3	44		51
17	9.39 220	50	9.40 584	52	0.59 416	9.98 636	4	43		50
18	9.39 270	49	9.40 636	53	0.59 364	9.98 633	3	42	1	0.8
19	9.39 319	50	9.40 689	53	0.59 311	9.98 630	3	41	2	1.7
20	9.39 369	49	9.40 742	53	0.59 258	9.98 627	3	40	3	2.6
21	9.39 418	49	9.40 795	52	0.59 205	9.98 623	3	39	4	3.4
22	9.39 467	50	9.40 847	53	0.59 153	9.98 620	4	38	5	4.2
23	9.39 517	49	9.40 900	52	0.59 100	9.98 617	3	37	6	5.1
24	9.39 566	49	9.40 952	53	0.59 048	9.98 614	3	36	7	6.0
25	9.39 615	49	9.41 005	52	0.58 995	9.98 610	4	35	8	6.8
26	9.39 664	49	9.41 057	52	0.58 943	9.98 607	3	34	9	7.6
27	9.39 713	49	9.41 109	52	0.58 891	9.98 604	3	33	10	8.5
28	9.39 762	49	9.41 161	53	0.58 839	9.98 601	20	32	20	17.0
29	9.39 811	49	9.41 214	52	0.58 786	9.98 597	30	31	30	25.5
30	9.39 860	49	9.41 266	52	0.58 734	9.98 594	40	30	40	34.0
31	9.39 909	49	9.41 318	52	0.58 682	9.98 591	50	29	50	42.5
32	9.39 958	48	9.41 370	52	0.58 630	9.98 588		28		48
33	9.40 006	49	9.41 422	52	0.58 578	9.98 584		27	1	0.8
34	9.40 055	48	9.41 474	52	0.58 526	9.98 581		26	2	1.6
35	9.40 103	49	9.41 526	52	0.58 474	9.98 578		25	3	2.4
36	9.40 152	48	9.41 578	51	0.58 422	9.98 574		24	4	3.2
37	9.40 200	49	9.41 629	52	0.58 371	9.98 571		23	5	4.0
38	9.40 249	48	9.41 681	52	0.58 319	9.98 568		22	6	4.8
39	9.40 297	49	9.41 733	51	0.58 267	9.98 565		21	7	5.6
40	9.40 346	48	9.41 784	52	0.58 216	9.98 561		20	8	6.4
41	9.40 394	48	9.41 836	51	0.58 164	9.98 558		19	9	7.2
42	9.40 442	48	9.41 887	52	0.58 113	9.98 555		18	10	8.0
43	9.40 490	48	9.41 939	51	0.58 061	9.98 551		17	20	16.0
44	9.40 538	48	9.41 990	51	0.58 010	9.98 548		16	30	24.0
45	9.40 586	48	9.42 041	52	0.57 959	9.98 545		15	40	32.0
46	9.40 634	48	9.42 093	51	0.57 907	9.98 541		14	50	40.0
47	9.40 682	48	9.42 144	51	0.57 856	9.98 538		13		4
48	9.40 730	48	9.42 195	51	0.57 805	9.98 535		12		4
49	9.40 778	47	9.42 246	51	0.57 754	9.98 531		11		4
50	9.40 825	48	9.42 297	51	0.57 703	9.98 528		10		4
51	9.40 873	48	9.42 348	51	0.57 652	9.98 525		9		4
52	9.40 921	47	9.42 399	51	0.57 601	9.98 521		8		4
53	9.40 968	48	9.42 450	51	0.57 550	9.98 518		7		4
54	9.41 016	47	9.42 501	51	0.57 499	9.98 515		6		4
55	9.41 063	48	9.42 552	51	0.57 448	9.98 511		5		4
56	9.41 111	47	9.42 603	50	0.57 397	9.98 508		4		4
57	9.41 158	47	9.42 653	51	0.57 347	9.98 505		3		4
58	9.41 205	47	9.42 704	51	0.57 296	9.98 501		2		4
59	9.41 252	48	9.42 755	50	0.57 245	9.98 498		1		4
60	9.41 300		9.42 805		0.57 195	9.98 494		0		4

L Sin	d	L Tan	cd	L Cot	L Cos	d	P P				
0	47	9.42 805	51	0.57 195	9.98 494	60					
1	47	9.42 856	50	0.57 144	9.98 491	59					
2	47	9.42 906	51	0.57 094	9.98 488	58	1	0.8	0.8	0.8	
3	47	9.42 957	50	0.57 043	9.98 484	57	2	1.7	1.7	1.6	
4	47	9.43 007	50	0.56 993	9.98 481	56	3	2.6	2.5	2.4	
5	47	9.43 057	51	0.56 943	9.98 477	55	4	3.4	3.3	3.3	
6	46	9.43 108	50	0.56 892	9.98 474	54	5	4.2	4.2	4.1	
7	47	9.43 158	50	0.56 842	9.98 471	53	6	5.1	5.0	4.9	
8	47	9.43 208	50	0.56 792	9.98 467	52	7	6.0	5.8	5.7	
9	46	9.43 258	50	0.56 742	9.98 464	51	8	6.8	6.7	6.5	
10	47	9.43 308	50	0.56 692	9.98 460	50	9	7.6	7.5	7.4	
11	46	9.43 358	50	0.56 642	9.98 457	49	10	8.5	8.3	8.2	
12	47	9.43 408	50	0.56 592	9.98 453	48	20	17.0	16.7	16.3	
13	46	9.43 458	50	0.56 542	9.98 450	47	30	25.5	25.0	24.5	
14	47	9.43 508	50	0.56 492	9.98 447	46	40	34.0	33.3	32.7	
15	46	9.43 558	49	0.56 442	9.98 443	45	50	42.5	41.7	40.8	
16	46	9.43 607	50	0.56 393	9.98 440	44					
17	47	9.43 657	50	0.56 343	9.98 436	43	1	48	47	48	
18	46	9.43 707	49	0.56 293	9.98 433	42	2	0.8	0.8	0.8	
19	46	9.43 756	50	0.56 244	9.98 429	41	3	1.6	1.6	1.5	
20	46	9.43 806	49	0.56 194	9.98 426	40	4	2.4	2.4	2.3	
21	46	9.43 855	50	0.56 145	9.98 422	39	5	3.2	3.1	3.1	
22	46	9.43 905	49	0.56 095	9.98 419	38	6	4.0	3.9	3.8	
23	46	9.43 954	50	0.56 046	9.98 415	37	7	4.8	4.7	4.6	
24	45	9.44 004	49	0.55 996	9.98 412	36	8	5.6	5.5	5.4	
25	46	9.44 053	49	0.55 947	9.98 409	35	9	6.4	6.3	6.1	
26	46	9.44 102	49	0.55 898	9.98 405	34	10	7.2	7.0	6.9	
27	46	9.44 151	50	0.55 849	9.98 402	33	20	8.0	7.8	7.7	
28	45	9.44 201	49	0.55 799	9.98 398	32	30	16.0	15.7	15.3	
29	46	9.44 250	49	0.55 750	9.98 395	31	40	24.0	23.5	23.0	
30	45	9.44 299	49	0.55 701	9.98 391	30	50	32.0	31.3	30.7	
31	46	9.44 348	49	0.55 652	9.98 388	29		40.0	39.2	38.3	
32	45	9.44 397	49	0.55 603	9.98 384	28	1	45	44	4	3
33	46	9.44 446	49	0.55 554	9.98 381	27	2	0.8	0.7	0.1	0.0
34	45	9.44 495	49	0.55 505	9.98 377	26	3	1.5	1.5	0.1	0.1
35	45	9.44 544	48	0.55 456	9.98 373	25	4	2.2	2.2	0.2	0.2
36	46	9.44 592	49	0.55 408	9.98 370	24	5	3.0	2.9	0.3	0.2
37	45	9.44 641	49	0.55 359	9.98 366	23	6	3.8	3.7	0.3	0.2
38	45	9.44 690	48	0.55 310	9.98 363	22	7	4.5	4.4	0.4	0.3
39	45	9.44 738	49	0.55 262	9.98 359	21	8	5.2	5.1	0.5	0.4
40	45	9.44 787	49	0.55 213	9.98 356	20	9	6.0	5.9	0.5	0.4
41	45	9.44 836	48	0.55 164	9.98 352	19	10	6.8	6.6	0.6	0.4
42	45	9.44 884	49	0.55 116	9.98 349	18	20	7.5	7.3	0.7	0.5
43	45	9.44 933	48	0.55 067	9.98 345	17	30	15.0	14.7	1.3	1.0
44	45	9.44 981	48	0.55 019	9.98 342	16	40	22.5	22.0	2.0	1.5
45	44	9.45 029	49	0.54 971	9.98 338	15	50	30.0	29.3	2.7	2.0
46	45	9.45 078	48	0.54 922	9.98 334	14		37.5	36.7	3.3	2.5
47	45	9.45 126	48	0.54 874	9.98 331	13					
48	45	9.45 174	48	0.54 826	9.98 327	12					
49	44	9.45 222	49	0.54 778	9.98 324	11					
50	45	9.45 271	48	0.54 729	9.98 320	10					
51	44	9.45 319	48	0.54 681	9.98 317	9					
52	45	9.45 367	48	0.54 633	9.98 313	8					
53	44	9.45 415	48	0.54 585	9.98 309	7					
54	45	9.45 463	48	0.54 537	9.98 306	6					
55	44	9.45 511	48	0.54 489	9.98 302	5					
56	44	9.45 559	47	0.54 441	9.98 299	4					
57	45	9.45 606	48	0.54 394	9.98 295	3					
58	44	9.45 654	48	0.54 346	9.98 291	2					
59	44	9.45 702	48	0.54 298	9.98 288	1					
60	44	9.45 750	48	0.54 250	9.98 284	0					
L Cos	d	L Cot	cd	L Tan	L Sin	d	P P				

	L Sin	d	L Tan	e d	L Cot	L Cos	d		P	P
0	9.44 034		9.45 750		0.54 250	9.98 284		60		
1	9.44 078	44	9.45 797	47	0.54 203	9.98 281	3	59	1	48
2	9.44 122	44	9.45 845	48	0.54 155	9.98 277	4	58	2	47
3	9.44 166	44	9.45 892	47	0.54 108	9.98 273	4	57	3	48
4	9.44 210	44	9.45 940	48	0.54 060	9.98 270	3	56	4	0.8
5	9.44 253	43	9.45 987	47	0.54 013	9.98 266	4	55	5	1.6
6	9.44 297	44	9.46 035	48	0.53 965	9.98 262	4	54	6	2.4
7	9.44 341	44	9.46 082	47	0.53 918	9.98 259	4	53	7	3.1
8	9.44 385	44	9.46 130	48	0.53 870	9.98 255	4	52	8	3.2
9	9.44 428	43	9.46 177	47	0.53 823	9.98 251	3	51	9	4.0
10	9.44 472	44	9.46 224	47	0.53 776	9.98 248	4	50	10	4.8
11	9.44 516	44	9.46 271	47	0.53 729	9.98 244	4	49	20	5.6
12	9.44 559	43	9.46 319	48	0.53 681	9.98 240	4	48	30	6.4
13	9.44 602	43	9.46 366	47	0.53 634	9.98 237	3	47	40	7.2
14	9.44 646	44	9.46 413	47	0.53 587	9.98 233	4	46	50	8.0
15	9.44 689	43	9.46 460	47	0.53 540	9.98 229	4	45		16.0
16	9.44 733	44	9.46 507	47	0.53 493	9.98 226	3	44		15.7
17	9.44 776	43	9.46 554	47	0.53 446	9.98 222	4	43	1	24.0
18	9.44 819	43	9.46 601	47	0.53 399	9.98 218	4	42	2	23.5
19	9.44 862	43	9.46 648	47	0.53 352	9.98 215	3	41	3	32.0
20	9.44 905	43	9.46 694	46	0.53 306	9.98 211	4	40	4	31.3
21	9.44 948	43	9.46 741	47	0.53 259	9.98 207	4	39	5	40.0
22	9.44 992	44	9.46 788	47	0.53 212	9.98 204	4	38	6	39.2
23	9.45 035	43	9.46 835	47	0.53 165	9.98 200	3	37	7	
24	9.45 077	42	9.46 881	46	0.53 119	9.98 196	4	36	8	45
25	9.45 120	43	9.46 928	47	0.53 072	9.98 192	4	35	9	44
26	9.45 163	43	9.46 975	47	0.53 025	9.98 189	4	34	10	43
27	9.45 206	43	9.47 021	46	0.52 979	9.98 185	4	33	20	0.7
28	9.45 249	43	9.47 068	47	0.52 932	9.98 181	4	32	30	0.7
29	9.45 292	43	9.47 114	46	0.52 886	9.98 177	4	31	40	1.5
30	9.45 334	42	9.47 160	46	0.52 840	9.98 174	3	30	50	2.0
31	9.45 377	43	9.47 207	47	0.52 793	9.98 170	4	29		21.5
32	9.45 419	42	9.47 253	46	0.52 747	9.98 166	4	28	1	28.7
33	9.45 462	43	9.47 299	46	0.52 701	9.98 162	4	27	2	35.8
34	9.45 504	42	9.47 346	47	0.52 654	9.98 159	4	26	3	
35	9.45 547	43	9.47 392	46	0.52 608	9.98 155	3	25	4	42
36	9.45 589	42	9.47 438	46	0.52 562	9.98 151	4	24	5	41
37	9.45 632	43	9.47 484	46	0.52 516	9.98 147	4	23	6	4
38	9.45 674	42	9.47 530	46	0.52 470	9.98 144	4	22	7	4
39	9.45 716	42	9.47 576	46	0.52 424	9.98 140	3	21	8	4
40	9.45 758	42	9.47 622	46	0.52 378	9.98 136	4	20	9	4
41	9.45 801	43	9.47 668	46	0.52 332	9.98 132	4	19	10	4
42	9.45 843	42	9.47 714	46	0.52 286	9.98 129	4	18	20	4
43	9.45 885	42	9.47 760	46	0.52 240	9.98 125	3	17	30	4
44	9.45 927	42	9.47 806	46	0.52 194	9.98 121	4	16	40	4
45	9.45 969	42	9.47 852	46	0.52 148	9.98 117	4	15	50	4
46	9.46 011	42	9.47 897	45	0.52 103	9.98 113	4	14		4
47	9.46 053	42	9.47 943	46	0.52 057	9.98 110	4	13		4
48	9.46 095	42	9.47 989	46	0.52 011	9.98 106	3	12		4
49	9.46 136	41	9.48 035	46	0.51 965	9.98 102	4	11		4
50	9.46 178	42	9.48 080	45	0.51 920	9.98 098	4	10	0	48
51	9.46 220	42	9.48 126	46	0.51 874	9.98 094	4	9	1	47
52	9.46 262	42	9.48 171	45	0.51 829	9.98 090	4	8	2	46
53	9.46 303	41	9.48 217	46	0.51 783	9.98 087	4	7	3	45
54	9.46 345	42	9.48 262	45	0.51 738	9.98 083	3	6	4	5.6
55	9.46 386	41	9.48 307	45	0.51 693	9.98 079	4	5	0	5.9
56	9.46 428	42	9.48 353	46	0.51 647	9.98 075	4	4	1	5.8
57	9.46 469	41	9.48 398	45	0.51 602	9.98 071	4	3	2	17.2
58	9.46 511	42	9.48 443	45	0.51 557	9.98 067	4	2	3	17.6
59	9.46 552	41	9.48 489	46	0.51 511	9.98 063	4	1	4	17.2
60	9.46 594	42	9.48 534	45	0.51 466	9.98 060	3	0	0	28.8
	L Cos	d	L Cot	e d	L Tan	L Sin	d		P	P

°	L Sin		L Tan		L Cot		L Cos		P P				
	d		c d		d		d						
0	9.46 594	41	9.48 534	45	0.51 466	9.98 060	4	80	45	44	43		
1	9.46 635	41	9.48 579	45	0.51 421	9.98 056	4	59	1	0.8	0.7	0.7	
2	9.46 676	41	9.48 624	45	0.51 376	9.98 052	4	58	2	1.5	1.5	1.4	
3	9.46 717	41	9.48 669	45	0.51 331	9.98 048	4	57	3	2.2	2.2	2.2	
4	9.46 758	42	9.48 714	45	0.51 286	9.98 044	4	56	4	3.0	2.9	2.9	
5	9.46 800	41	9.48 759	45	0.51 241	9.98 040	4	55	5	3.8	3.7	3.6	
6	9.46 841	41	9.48 804	45	0.51 196	9.98 036	4	54	6	4.5	4.4	4.3	
7	9.46 882	41	9.48 849	45	0.51 151	9.98 032	4	53	7	5.2	5.1	5.0	
8	9.46 923	41	9.48 894	45	0.51 106	9.98 029	3	52	8	6.0	5.9	5.7	
9	9.46 964	41	9.48 939	45	0.51 061	9.98 025	4	51	9	6.8	6.6	6.4	
10	9.47 005	40	9.48 984	45	0.51 016	9.98 021	4	50	10	7.5	7.3	7.2	
11	9.47 045	41	9.49 029	44	0.50 971	9.98 017	4	49	20	15.0	14.7	14.3	
12	9.47 086	41	9.49 073	45	0.50 927	9.98 013	4	48	30	22.5	22.0	21.5	
13	9.47 127	41	9.49 118	45	0.50 882	9.98 009	4	47	40	30.0	29.3	28.7	
14	9.47 168	41	9.49 163	45	0.50 837	9.98 005	4	46	50	37.5	36.7	35.8	
15	9.47 209	40	9.49 207	45	0.50 793	9.98 001	4	45		42	41	40	
16	9.47 249	41	9.49 252	44	0.50 748	9.97 997	4	44	1	0.7	0.7	0.7	
17	9.47 290	40	9.49 296	45	0.50 704	9.97 993	4	43	2	1.4	1.4	1.3	
18	9.47 330	41	9.49 341	44	0.50 659	9.97 989	4	42	3	2.1	2.0	2.0	
19	9.47 371	40	9.49 385	45	0.50 615	9.97 986	3	41	4	2.8	2.7	2.7	
20	9.47 411	41	9.49 430	44	0.50 570	9.97 982	4	40	5	3.5	3.4	3.3	
21	9.47 452	40	9.49 474	45	0.50 526	9.97 978	4	39	6	4.2	4.1	4.0	
22	9.47 492	41	9.49 519	44	0.50 481	9.97 974	4	38	7	4.9	4.8	4.7	
23	9.47 533	40	9.49 563	44	0.50 437	9.97 970	4	37	8	5.6	5.5	5.3	
24	9.47 573	40	9.49 607	45	0.50 393	9.97 966	4	36	9	6.3	6.2	6.0	
25	9.47 613	41	9.49 652	44	0.50 348	9.97 962	4	35	10	7.0	6.8	6.7	
26	9.47 654	40	9.49 696	44	0.50 304	9.97 958	4	34	20	14.0	13.7	13.3	
27	9.47 694	40	9.49 740	44	0.50 260	9.97 954	4	33	30	21.0	20.5	20.0	
28	9.47 734	40	9.49 784	44	0.50 216	9.97 950	4	32	40	28.0	27.3	26.7	
29	9.47 774	40	9.49 828	44	0.50 172	9.97 946	4	31	50	35.0	34.2	33.3	
30	9.47 814	40	9.49 872	44	0.50 128	9.97 942	4	30		39	5	4	3
31	9.47 854	40	9.49 916	44	0.50 084	9.97 938	4	29	1	0.6	0.1	0.1	0.0
32	9.47 894	40	9.49 960	44	0.50 040	9.97 934	4	28	2	1.3	0.2	0.1	0.1
33	9.47 934	40	9.50 004	44	0.49 996	9.97 930	4	27	3	2.0	0.2	0.2	0.2
34	9.47 974	40	9.50 048	44	0.49 952	9.97 926	4	26	4	2.6	0.3	0.3	0.2
35	9.48 014	40	9.50 092	44	0.49 908	9.97 922	4	25	5	3.2	0.4	0.3	0.2
36	9.48 054	40	9.50 136	44	0.49 864	9.97 918	4	24	6	3.9	0.5	0.4	0.3
37	9.48 094	40	9.50 180	44	0.49 820	9.97 914	4	23	7	4.6	0.6	0.5	0.4
38	9.48 133	39	9.50 223	43	0.49 777	9.97 910	4	22	8	5.2	0.7	0.5	0.4
39	9.48 173	40	9.50 267	44	0.49 733	9.97 906	4	21	9	5.8	0.8	0.6	0.4
40	9.48 213	40	9.50 311	44	0.49 689	9.97 902	4	20	10	6.5	0.8	0.7	0.5
41	9.48 252	39	9.50 355	44	0.49 645	9.97 898	4	19	20	13.0	1.7	1.3	1.0
42	9.48 292	40	9.50 398	43	0.49 602	9.97 894	4	18	30	19.5	2.5	2.0	1.5
43	9.48 332	40	9.50 442	44	0.49 558	9.97 890	4	17	40	26.0	3.3	2.7	2.0
44	9.48 371	39	9.50 485	43	0.49 515	9.97 886	4	16	50	32.5	4.2	3.3	2.5
45	9.48 411	40	9.50 529	44	0.49 471	9.97 882	4	15		5	4	4	
46	9.48 450	39	9.50 572	43	0.49 428	9.97 878	4	14		43	45	44	
47	9.48 490	40	9.50 616	44	0.49 384	9.97 874	4	13					
48	9.48 529	39	9.50 659	43	0.49 341	9.97 870	4	12	0	4.3	5.6	5.5	
49	9.48 568	39	9.50 703	44	0.49 297	9.97 866	4	11	1	12.9	16.9	16.5	
50	9.48 607	39	9.50 746	43	0.49 254	9.97 862	5	10	2	21.5	28.1	27.5	
51	9.48 647	40	9.50 789	44	0.49 211	9.97 857	4	9	3	30.1	39.4	38.5	
52	9.48 686	39	9.50 833	43	0.49 167	9.97 853	4	8	4	38.7	—	—	
53	9.48 725	39	9.50 876	43	0.49 124	9.97 849	4	7	5				
54	9.48 764	39	9.50 919	43	0.49 081	9.97 845	4	6		4	3	3	
55	9.48 803	39	9.50 962	43	0.49 038	9.97 841	4	5		43	45	44	
56	9.48 842	39	9.51 005	43	0.48 995	9.97 837	4	4	0				
57	9.48 881	39	9.51 048	43	0.48 952	9.97 833	4	3	1	5.4	7.5	7.3	
58	9.48 920	39	9.51 092	44	0.48 908	9.97 829	4	2	2	16.1	22.5	22.0	
59	9.48 959	39	9.51 135	43	0.48 865	9.97 825	4	1	3	26.9	37.5	36.7	
60	9.48 998	39	9.51 178	43	0.48 822	9.97 821	4	0	4	37.6	—	—	
	L Cos	d	L Cot	c d	L Tan	L Sin	d			P	P		

	L Sin	d	L Tan	ed	L Cot	L Cos	d	P P			
0	9.48 998		9.51 178	43	0.48 822	9.97 821	4	100	42	42	41
1	9.49 037	39	9.51 221	43	0.48 779	9.97 817	5	59	1	0.7	0.7
2	9.49 076	39	9.51 264	42	0.48 736	9.97 812	4	58	2	1.4	1.4
3	9.49 115	39	9.51 306	43	0.48 694	9.97 808	4	57	3	2.2	2.1
4	9.49 153	38	9.51 349	43	0.48 651	9.97 804	4	56	4	2.9	2.8
5	9.49 192	39	9.51 392	43	0.48 608	9.97 800	4	55	5	3.6	3.5
6	9.49 231	39	9.51 435	43	0.48 565	9.97 796	4	54	6	4.3	4.2
7	9.49 269	38	9.51 478	42	0.48 522	9.97 792	4	53	7	5.0	4.9
8	9.49 308	39	9.51 520	43	0.48 480	9.97 788	4	52	8	5.7	5.6
9	9.49 347	39	9.51 563	43	0.48 437	9.97 784	5	51	9	6.4	6.3
10	9.49 385	38	9.51 606	42	0.48 394	9.97 779	4	50	10	7.2	7.0
11	9.49 424	39	9.51 648	43	0.48 352	9.97 775	4	49	20	14.3	14.0
12	9.49 462	38	9.51 691	43	0.48 309	9.97 771	4	48	30	21.5	21.0
13	9.49 500	38	9.51 734	42	0.48 266	9.97 767	4	47	40	28.7	28.0
14	9.49 539	39	9.51 776	43	0.48 224	9.97 763	4	46	50	35.8	35.0
15	9.49 577	38	9.51 819	42	0.48 181	9.97 759	5	45		37	38
16	9.49 615	39	9.51 861	42	0.48 139	9.97 754	4	44	1	0.6	0.6
17	9.49 654	38	9.51 903	43	0.48 097	9.97 750	4	43	2	1.3	1.3
18	9.49 692	38	9.51 946	42	0.48 054	9.97 746	4	42	3	2.0	1.9
19	9.49 730	38	9.51 988	43	0.48 012	9.97 742	4	41	4	2.6	2.5
20	9.49 768	38	9.52 031	42	0.47 969	9.97 738	4	40	5	3.2	3.2
21	9.49 806	38	9.52 073	42	0.47 927	9.97 734	5	39	6	3.9	3.8
22	9.49 844	38	9.52 115		0.47 885	9.97 729	4	38	7	4.6	4.4
23	9.49 882	38	9.52 157		0.47 843	9.97 725	4	37	8	5.2	5.1
24	9.49 920	38	9.52 200		0.47 800	9.97 721	4	36	9	5.8	5.7
25	9.49 958	38	9.52 242		0.47 758	9.97 717	4	35	10	6.5	6.3
26	9.49 996	38	9.52 284	42	0.47 716	9.97 713	5	34	20	13.0	12.7
27	9.50 034	38	9.52 326	42	0.47 674	9.97 708	4	33	30	19.5	19.0
28	9.50 072	38	9.52 368	42	0.47 632	9.97 704	4	32	40	26.0	25.3
29	9.50 110	38	9.52 410	42	0.47 590	9.97 700	4	31	50	32.5	31.7
30	9.50 148	37	9.52 452	42	0.47 548	9.97 696	5	30		36	5
31	9.50 185	38	9.52 494	42	0.47 506	9.97 691	4	29	1	0.6	0.1
32	9.50 223	38	9.52 536	42	0.47 464	9.97 687	4	28	2	1.2	0.2
33	9.50 261	37	9.52 578	42	0.47 422	9.97 683	4	27	3	1.8	0.2
34	9.50 298	38	9.52 620	41	0.47 380	9.97 679	5	26	4	2.4	0.3
35	9.50 336	38	9.52 661	42	0.47 339	9.97 674	4	25	5	3.0	0.4
36	9.50 374	37	9.52 703	42	0.47 297	9.97 670	4	24	6	3.6	0.5
37	9.50 411	38	9.52 745	42	0.47 255	9.97 666	4	23	7	4.2	0.6
38	9.50 449	37	9.52 787	42	0.47 213	9.97 662	5	22	8	4.8	0.7
39	9.50 486	37	9.52 829	41	0.47 171	9.97 657	4	21	9	5.4	0.8
40	9.50 523	38	9.52 870	42	0.47 130	9.97 653	4	20	10	6.0	0.9
41	9.50 561	37	9.52 912	41	0.47 088	9.97 649	4	19	20	12.0	1.7
42	9.50 598	37	9.52 953	42	0.47 047	9.97 645	5	18	30	18.0	2.5
43	9.50 635	37	9.52 995	42	0.47 005	9.97 640	4	17	40	24.0	3.3
44	9.50 673	37	9.53 037	41	0.46 963	9.97 636	4	16	50	30.0	4.2
45	9.50 710	37	9.53 078	42	0.46 922	9.97 632	4	15		5	5
46	9.50 747	37	9.53 120	41	0.46 880	9.97 628	4	14		5	5
47	9.50 784	37	9.53 161	41	0.46 839	9.97 623	5	13		43	42
48	9.50 821	37	9.53 202	42	0.46 798	9.97 619	4	12	0	4.3	4.2
49	9.50 858	38	9.53 244	41	0.46 756	9.97 615	4	11	1	12.9	12.6
50	9.50 896	37	9.53 285	42	0.46 715	9.97 610	5	10	2	21.5	21.0
51	9.50 933	37	9.53 327	41	0.46 673	9.97 606	4	9	3	30.1	29.4
52	9.50 970	37	9.53 368	41	0.46 632	9.97 602	4	8	4	38.7	37.8
53	9.51 007	36	9.53 409	41	0.46 591	9.97 597	5	7	5		
54	9.51 043	37	9.53 450	42	0.46 550	9.97 593	4	6		4	4
55	9.51 080	37	9.53 492	41	0.46 508	9.97 589	4	5		43	42
56	9.51 117	37	9.53 533	41	0.46 467	9.97 584	5	4	0		
57	9.51 154	37	9.53 574	41	0.46 426	9.97 580	4	3	1	5.4	5.2
58	9.51 191	36	9.53 615	41	0.46 385	9.97 576	4	2	2	16.1	15.8
59	9.51 227	37	9.53 656	41	0.46 344	9.97 571	5	1	3	26.9	26.2
60	9.51 264		9.53 697		0.46 303	9.97 567	4	0	4	37.6	36.8
	L Cos	d	L Cot	ed	L Tan	L Sin	d	P P			

L Sin	d	L Tan	c d	L Cot	L Cos	d	P P			
0	0.51 264	37	9.53 697		0.46 303	9.97 567	60			
1	0.51 301	37	9.53 738	41	0.46 262	9.97 563	4			
2	0.51 338	36	9.53 779	41	0.46 221	9.97 558	5	59	41	40
3	0.51 374	37	9.53 820	41	0.46 180	9.97 554	4	58	1	0.7
4	0.51 411	36	9.53 861	41	0.46 139	9.97 550	4	57	2	1.4
5	0.51 447	37	9.53 902	41	0.46 098	9.97 545	5	56	3	2.0
6	0.51 484	36	9.53 943	41	0.46 057	9.97 541	4	55	4	2.7
7	0.51 520	37	9.53 984	41	0.46 016	9.97 536	5	54	5	3.4
8	0.51 557	36	9.54 025	41	0.45 975	9.97 532	4	53	6	4.1
9	0.51 593	36	9.54 065	40	0.45 935	9.97 528	4	52	7	4.8
10	0.51 629	37	9.54 106	41	0.45 894	9.97 523	5	51	8	5.5
11	0.51 666	36	9.54 147	41	0.45 853	9.97 519	4	50	9	6.2
12	0.51 702	36	9.54 187	40	0.45 813	9.97 515	4	49	10	6.8
13	0.51 738	36	9.54 228	41	0.45 772	9.97 510	5	48	20	13.7
14	0.51 774	36	9.54 269	41	0.45 731	9.97 506	4	47	30	20.5
15	0.51 811	37	9.54 309	40	0.45 691	9.97 501	5	46	40	27.3
16	0.51 847	36	9.54 350	41	0.45 650	9.97 497	4	45	50	34.2
17	0.51 883	36	9.54 390	40	0.45 610	9.97 492	5	44		37
18	0.51 919	36	9.54 431	41	0.45 569	9.97 488	4	43		36
19	0.51 955	36	9.54 471	40	0.45 529	9.97 484	4	42		35
20	0.51 991	36	9.54 512	41	0.45 488	9.97 479	5	41		
21	0.52 027	36	9.54 552	40	0.45 448	9.97 475	4	40		
22	0.52 063	36	9.54 593	41	0.45 407	9.97 470	5	39		
23	0.52 099	36	9.54 633	40	0.45 367	9.97 466	4	38		
24	0.52 135	36	9.54 673	40	0.45 327	9.97 461	5	37		
25	0.52 171	36	9.54 714	41	0.45 286	9.97 457	4	36		
26	0.52 207	36	9.54 754	40	0.45 246	9.97 453	4	35		
27	0.52 242	35	9.54 794	40	0.45 206	9.97 448	5	34		
28	0.52 278	36	9.54 835	41	0.45 165	9.97 444	4	33		
29	0.52 314	36	9.54 875	40	0.45 125	9.97 439	5	32		
30	0.52 350	36	9.54 915	40	0.45 085	9.97 435	4	31		
31	0.52 385	35	9.54 955	40	0.45 045	9.97 430	5	30		
32	0.52 421	36	9.54 995	40	0.45 005	9.97 426	4	29		
33	0.52 456	35	9.55 035	40	0.44 965	9.97 421	5	28		
34	0.52 492	36	9.55 075	40	0.44 925	9.97 417	4	27		
35	0.52 527	35	9.55 115	40	0.44 885	9.97 412	5	26		
36	0.52 563	36	9.55 155	40	0.44 845	9.97 408	4	25		
37	0.52 598	35	9.55 195	40	0.44 805	9.97 403	5	24		
38	0.52 634	36	9.55 235	40	0.44 765	9.97 399	4	23		
39	0.52 669	35	9.55 275	40	0.44 725	9.97 394	5	22		
40	0.52 705	36	9.55 315	40	0.44 685	9.97 390	4	21		
41	0.52 740	35	9.55 355	40	0.44 645	9.97 385	5	20		
42	0.52 775	35	9.55 395	40	0.44 605	9.97 381	4	19		
43	0.52 811	36	9.55 434	39	0.44 566	9.97 376	5	18		
44	0.52 846	35	9.55 474	40	0.44 526	9.97 372	4	17		
45	0.52 881	35	9.55 514	40	0.44 486	9.97 367	5	16		
46	0.52 916	35	9.55 554	40	0.44 446	9.97 363	4	15		
47	0.52 951	35	9.55 593	39	0.44 407	9.97 358	5	14		
48	0.52 986	35	9.55 633	40	0.44 367	9.97 353	5	13		
49	0.53 021	35	9.55 673	40	0.44 327	9.97 349	4	12		
50	0.53 056	35	9.55 712	39	0.44 288	9.97 344	5	11		
51	0.53 092	36	9.55 752	40	0.44 248	9.97 340	4	10		
52	0.53 126	34	9.55 791	39	0.44 209	9.97 335	5	9		
53	0.53 161	35	9.55 831	40	0.44 169	9.97 331	4	8		
54	0.53 196	35	9.55 870	39	0.44 130	9.97 326	5	7		
55	0.53 231	35	9.55 910	40	0.44 090	9.97 322	4	6		
56	0.53 266	35	9.55 949	39	0.44 051	9.97 317	5	5		
57	0.53 301	35	9.55 989	40	0.44 011	9.97 312	4	4		
58	0.53 336	35	9.56 028	39	0.43 972	9.97 308	5	3		
59	0.53 370	34	9.56 067	39	0.43 933	9.97 303	4	2		
60	0.53 405	35	9.56 107	40	0.43 893	9.97 299	5	1		
	L Cos	d	L Cot	c d	L Tan	L Sin	d			

	L Sin	d	L Tan	c d	L Cot	L Cos	d		P P			
0	9.53 405		9.56 107		0.43 893	9.97 299		60		40	39	38
1	9.53 440	35	9.56 146	39	0.43 854	9.97 294	5	59	1	0.7	0.6	0.6
2	9.53 475	35	9.56 185	39	0.43 815	9.97 289	5	58	2	1.3	1.3	1.3
3	9.53 509	34	9.56 224	39	0.43 776	9.97 285	4	57	3	2.0	2.0	1.9
4	9.53 544	35	9.56 264	40	0.43 736	9.97 280	5	56	4	2.7	2.6	2.5
5	9.53 578	34	9.56 303	39	0.43 697	9.97 276	4	55	5	3.3	3.2	3.2
6	9.53 613	35	9.56 342	39	0.43 658	9.97 271	5	54	6	4.0	3.9	3.8
7	9.53 647	34	9.56 381	39	0.43 619	9.97 266	5	53	7	4.7	4.6	4.4
8	9.53 682	35	9.56 420	39	0.43 580	9.97 262	4	52	8	5.3	5.2	5.1
9	9.53 716	34	9.56 459	39	0.43 541	9.97 257	5	51	9	6.0	5.8	5.7
10	9.53 751	35	9.56 498	39	0.43 502	9.97 252	5	50	10	6.7	6.5	6.3
11	9.53 785	34	9.56 537	39	0.43 463	9.97 248	4	49	20	13.3	13.0	12.7
12	9.53 819	34	9.56 576	39	0.43 424	9.97 243	5	48	30	20.0	19.5	19.0
13	9.53 854	35	9.56 615	39	0.43 385	9.97 238	5	47	40	26.7	26.0	25.3
14	9.53 888	34	9.56 654	39	0.43 346	9.97 234	4	46	50	33.3	32.5	31.7
15	9.53 922	34	9.56 693	39	0.43 307	9.97 229	5	45		37	35	34
16	9.53 957	35	9.56 732	39	0.43 268	9.97 224	5	44	1	0.6	0.6	0.6
17	9.53 991	34	9.56 771	39	0.43 229	9.97 220	4	43	2	1.2	1.2	1.1
18	9.54 025	34	9.56 810	39	0.43 190	9.97 215	5	42	3	1.8	1.8	1.7
19	9.54 059	34	9.56 849	39	0.43 151	9.97 210	5	41	4	2.5	2.3	2.3
20	9.54 093	34	9.56 887	38	0.43 113	9.97 206	4	40	5	3.1	2.9	2.8
21	9.54 127	34	9.56 926	39	0.43 074	9.97 201	5	39	6	3.7	3.5	3.4
22	9.54 161	34	9.56 965	39	0.43 035	9.97 196	5	38	7	4.3	4.1	4.0
23	9.54 195	34	9.57 004	39	0.42 996	9.97 192	4	37	8	4.9	4.7	4.5
24	9.54 229	34	9.57 042	38	0.42 958	9.97 187	5	36	9	5.6	5.2	5.1
25	9.54 263	34	9.57 081	39	0.42 919	9.97 182	5	35	10	6.2	5.8	5.7
26	9.54 297	34	9.57 120	39	0.42 880	9.97 178	4	34	20	12.3	11.7	11.3
27	9.54 331	34	9.57 158	38	0.42 842	9.97 173	5	33	30	18.5	17.5	17.0
28	9.54 365	34	9.57 197	39	0.42 803	9.97 168	5	32	40	24.7	23.3	22.7
29	9.54 399	34	9.57 235	38	0.42 765	9.97 163	5	31	50	30.8	29.2	28.3
30	9.54 433	34	9.57 274	39	0.42 726	9.97 159	4	30		33	5	4
31	9.54 466	33	9.57 312	38	0.42 688	9.97 154	5	29	1	0.6	0.1	0.1
32	9.54 500	34	9.57 351	39	0.42 649	9.97 149	5	28	2	1.1	0.2	0.1
33	9.54 534	34	9.57 389	38	0.42 611	9.97 145	4	27	3	1.6	0.2	0.2
34	9.54 567	35	9.57 428	39	0.42 572	9.97 140	5	26	4	2.2	0.3	0.3
35	9.54 601	34	9.57 466	38	0.42 534	9.97 135	5	25	5	2.8	0.4	0.3
36	9.54 635	34	9.57 504	38	0.42 496	9.97 130	5	24	6	3.3	0.5	0.4
37	9.54 668	33	9.57 543	39	0.42 457	9.97 126	4	23	7	3.8	0.6	0.5
38	9.54 702	34	9.57 581	38	0.42 419	9.97 121	5	22	8	4.4	0.7	0.5
39	9.54 735	33	9.57 619	38	0.42 381	9.97 116	5	21	9	5.0	0.8	0.6
40	9.54 769	34	9.57 658	39	0.42 342	9.97 111	5	20	10	5.5	0.8	0.7
41	9.54 802	33	9.57 696	38	0.42 304	9.97 107	4	19	20	11.0	1.7	1.3
42	9.54 836	34	9.57 734	38	0.42 266	9.97 102	5	18	30	16.5	2.5	2.0
43	9.54 869	33	9.57 772	38	0.42 228	9.97 097	5	17	40	22.0	3.3	2.7
44	9.54 903	34	9.57 810	38	0.42 190	9.97 092	5	16	50	27.5	4.2	3.3
45	9.54 936	33	9.57 849	39	0.42 151	9.97 087	5	15		5	5	5
46	9.54 969	33	9.57 887	38	0.42 113	9.97 083	4	14		40	39	38
47	9.55 003	34	9.57 925	38	0.42 075	9.97 078	5	13	0			
48	9.55 036	33	9.57 963	38	0.42 037	9.97 073	5	12	1	4.0	3.9	3.8
49	9.55 069	33	9.58 001	38	0.41 999	9.97 068	5	11	2	12.0	11.7	11.4
50	9.55 102	33	9.58 039	38	0.41 961	9.97 063	5	10	3	20.0	19.5	19.0
51	9.55 136	34	9.58 077	38	0.41 923	9.97 059	4	9	4	28.0	27.3	26.6
52	9.55 169	33	9.58 115	38	0.41 885	9.97 054	5	8	5	36.0	35.1	34.2
53	9.55 202	33	9.58 153	38	0.41 847	9.97 049	5	7		5	4	4
54	9.55 235	33	9.58 191	38	0.41 809	9.97 044	5	6		37	39	38
55	9.55 268	33	9.58 229	38	0.41 771	9.97 039	5	5	0			
56	9.55 301	33	9.58 267	38	0.41 733	9.97 035	4	4	1	3.7	4.9	4.8
57	9.55 334	33	9.58 304	37	0.41 696	9.97 030	5	3	2	11.1	14.6	14.2
58	9.55 367	33	9.58 342	38	0.41 658	9.97 025	5	2	3	18.5	24.4	23.8
59	9.55 400	33	9.58 380	38	0.41 620	9.97 020	5	1	4	25.9	34.1	33.2
60	9.55 433	33	9.58 418	38	0.41 582	9.97 015	5	0	5	33.3		
	L Cos	d	L Cot	c d	L Tan	L Sin	d			P P		

	L Sin	d	L Tan	ed	L Cot	L Cos	d		P	P
0	9.55 433	33	9.58 418		0.41 582	9.97 015		60		
1	9.55 466	33	9.58 455	37	0.41 545	9.97 010	5	59	38	37
2	9.55 499	33	9.58 493	38	0.41 507	9.97 005	5	58	1	0.6
3	9.55 532	32	9.58 531	38	0.41 469	9.97 001	4	57	2	1.3
4	9.55 564	33	9.58 569	37	0.41 431	9.96 996	5	56	3	1.9
5	9.55 597	33	9.58 606	38	0.41 394	9.96 991	5	55	4	2.5
6	9.55 630	33	9.58 644	37	0.41 356	9.96 986	5	54	5	3.2
7	9.55 663	32	9.58 681	38	0.41 319	9.96 981	5	53	6	3.8
8	9.55 695	33	9.58 719	38	0.41 281	9.96 976	5	52	7	4.4
9	9.55 728	33	9.58 757	37	0.41 243	9.96 971	5	51	8	5.1
10	9.55 761	32	9.58 794	38	0.41 206	9.96 966	5	50	9	5.7
11	9.55 793	33	9.58 832	37	0.41 168	9.96 962	4	49	10	6.3
12	9.55 826	32	9.58 869	38	0.41 131	9.96 957	5	48	20	12.7
13	9.55 858	33	9.58 907	37	0.41 093	9.96 952	5	47	30	19.0
14	9.55 891	32	9.58 944	37	0.41 056	9.96 947	5	46	40	25.3
15	9.55 923	33	9.58 981	38	0.41 019	9.96 942	5	45	50	31.7
16	9.55 956	32	9.59 019	37	0.40 981	9.96 937	5	44		33
17	9.55 988	33	9.59 056	38	0.40 944	9.96 932	5	43	1	0.6
18	9.56 021	32	9.59 094	37	0.40 906	9.96 927	5	42	2	1.1
19	9.56 053	32	9.59 131	37	0.40 869	9.96 922	5	41	3	1.6
20	9.56 085	33	9.59 168	37	0.40 832	9.96 917	5	40	4	2.2
21	9.56 118	32	9.59 205	38	0.40 795	9.96 912	5	39	5	2.8
22	9.56 150	32	9.59 243	37	0.40 757	9.96 907	5	38	6	3.3
23	9.56 182	33	9.59 280	37	0.40 720	9.96 903	4	37	7	3.8
24	9.56 215	32	9.59 317	37	0.40 683	9.96 898	5	36	8	4.4
25	9.56 247	32	9.59 354	37	0.40 646	9.96 893	5	35	9	5.0
26	9.56 279	32	9.59 391	38	0.40 609	9.96 888	5	34	10	5.5
27	9.56 311	32	9.59 429	37	0.40 571	9.96 883	5	33	20	11.0
28	9.56 343	32	9.59 466	37	0.40 534	9.96 878	5	32	30	16.5
29	9.56 375	33	9.59 503	37	0.40 497	9.96 873	5	31	40	22.0
30	9.56 408	32	9.59 540	37	0.40 460	9.96 868	5	30	50	27.5
31	9.56 440	32	9.59 577	37	0.40 423	9.96 863	5	29		6
32	9.56 472	32	9.59 614	37	0.40 386	9.96 858	5	28	1	0.1
33	9.56 504	32	9.59 651	37	0.40 349	9.96 853	5	27	2	0.2
34	9.56 536	32	9.59 688	37	0.40 312	9.96 848	5	26	3	0.3
35	9.56 568	31	9.59 725	37	0.40 275	9.96 843	5	25	4	0.4
36	9.56 599	32	9.59 762	37	0.40 238	9.96 838	5	24	5	0.5
37	9.56 631	32	9.59 799	36	0.40 201	9.96 833	5	23	6	0.6
38	9.56 663	32	9.59 835	37	0.40 165	9.96 828	5	22	7	0.7
39	9.56 695	32	9.59 872	37	0.40 128	9.96 823	5	21	8	0.8
40	9.56 727	32	9.59 909	37	0.40 091	9.96 818	5	20	9	0.9
41	9.56 759	31	9.59 946	37	0.40 054	9.96 813	5	19	10	1.0
42	9.56 790	32	9.59 983	36	0.40 017	9.96 808	5	18	20	2.0
43	9.56 822	32	9.60 019	37	0.39 981	9.96 803	5	17	30	3.0
44	9.56 854	32	9.60 056	37	0.39 944	9.96 798	5	16	40	4.0
45	9.56 886	31	9.60 093	37	0.39 907	9.96 793	5	15	50	5.0
46	9.56 917	32	9.60 130	36	0.39 870	9.96 788	5	14		6
47	9.56 949	31	9.60 166	37	0.39 834	9.96 783	5	13	0	3.1
48	9.56 980	32	9.60 203	37	0.39 797	9.96 778	5	12	1	9.2
49	9.57 012	32	9.60 240	36	0.39 760	9.96 772	6	11	2	11.4
50	9.57 044	31	9.60 276	37	0.39 724	9.96 767	5	10	3	15.4
51	9.57 075	32	9.60 313	36	0.39 687	9.96 762	5	9	4	21.6
52	9.57 107	31	9.60 349	37	0.39 651	9.96 757	5	8	5	27.8
53	9.57 138	31	9.60 386	36	0.39 614	9.96 752	5	7	6	33.9
54	9.57 169	32	9.60 422	37	0.39 578	9.96 747	5	6		5
55	9.57 201	31	9.60 459	36	0.39 541	9.96 742	5	5	0	3.6
56	9.57 232	32	9.60 495	37	0.39 505	9.96 737	5	4	1	10.8
57	9.57 264	31	9.60 532	36	0.39 468	9.96 732	5	3	2	18.0
58	9.57 295	31	9.60 568	37	0.39 432	9.96 727	5	2	3	25.2
59	9.57 326	32	9.60 605	36	0.39 395	9.96 722	5	1	4	32.4
60	9.57 358	31	9.60 641	36	0.39 359	9.96 717	5	0	5	—

	L Sin	d	L Tan	e d	L Cot	L Cos	d		P	P		
0	9.57358		9.60641		0.39359	9.96717	6	60		37	36	35
1	9.57380	31	9.60677	36	0.39323	9.96711	5	59	1	0.6	0.6	0.6
2	9.57420	31	9.60714	37	0.39286	9.96706	5	58	2	1.2	1.2	1.2
3	9.57451	31	9.60750	36	0.39250	9.96701	5	57	3	1.8	1.8	1.8
4	9.57482	31	9.60786	36	0.39214	9.96696	5	56	4	2.5	2.4	2.3
5	9.57514	32	9.60823	37	0.39177	9.96691	5	55	5	3.1	3.0	2.9
6	9.57545	31	9.60859	36	0.39141	9.96686	5	54	6	3.7	3.6	3.5
7	9.57576	31	9.60895	36	0.39105	9.96681	5	53	7	4.3	4.2	4.1
8	9.57607	31	9.60931	36	0.39069	9.96676	6	52	8	4.9	4.8	4.7
9	9.57638	31	9.60967	36	0.39033	9.96670	5	51	9	5.6	5.4	5.2
10	9.57669	31	9.61004	37	0.38996	9.96665	5	50	10	6.2	6.0	5.8
11	9.57700	31	9.61040	36	0.38960	9.96660	5	49	20	12.3	12.0	11.7
12	9.57731	31	9.61076	35	0.38924	9.96655	5	48	30	18.5	18.0	17.5
13	9.57762	31	9.61112	36	0.38888	9.96650	5	47	40	24.7	24.0	23.3
14	9.57793	31	9.61148	36	0.38852	9.96645	5	46	50	30.8	30.0	29.2
15	9.57824	31	9.61184	36	0.38816	9.96640	6	45		32	31	30
16	9.57855	31	9.61220	36	0.38780	9.96634	5	44	1	0.5	0.5	0.5
17	9.57885	30	9.61256	36	0.38744	9.96629	5	43	2	1.1	1.0	1.0
18	9.57916	31	9.61292	36	0.38708	9.96624	5	42	3	1.6	1.6	1.5
19	9.57947	31	9.61328	36	0.38672	9.96619	5	41	4	2.1	2.1	2.0
20	9.57978	31	9.61364	36	0.38636	9.96614	5	40	5	2.7	2.6	2.5
21	9.58008	30	9.61400	36	0.38600	9.96608	6	39	6	3.2	3.1	3.0
22	9.58039	31	9.61436	36	0.38564	9.96603	5	38	7	3.7	3.6	3.5
23	9.58070	31	9.61472	36	0.38528	9.96598	5	37	8	4.3	4.1	4.0
24	9.58101	31	9.61508	36	0.38492	9.96593	5	36	9	4.8	4.6	4.5
25	9.58131	30	9.61544	36	0.38456	9.96588	5	35	10	5.3	5.2	5.0
26	9.58162	31	9.61579	36	0.38421	9.96582	6	34	20	10.7	10.3	10.0
27	9.58192	30	9.61615	36	0.38385	9.96577	5	33	30	16.0	15.5	15.0
28	9.58223	31	9.61651	36	0.38349	9.96572	5	32	40	21.3	20.7	20.0
29	9.58253	30	9.61687	36	0.38313	9.96567	5	31	50	26.7	25.8	25.0
30	9.58284	31	9.61722	35	0.38278	9.96562	5	30		29	6	5
31	9.58314	30	9.61758	36	0.38242	9.96556	6	29	1	0.5	0.1	0.1
32	9.58345	31	9.61794	36	0.38206	9.96551	5	28	2	1.0	0.2	0.2
33	9.58375	30	9.61830	36	0.38170	9.96546	5	27	3	1.4	0.3	0.2
34	9.58406	31	9.61865	35	0.38135	9.96541	5	26	4	1.9	0.4	0.3
35	9.58436	30	9.61901	36	0.38099	9.96535	6	25	5	2.4	0.5	0.4
36	9.58467	31	9.61936	35	0.38064	9.96530	5	24	6	2.9	0.6	0.5
37	9.58497	30	9.61972	36	0.38028	9.96525	5	23	7	3.4	0.7	0.6
38	9.58527	30	9.62008	36	0.37992	9.96520	5	22	8	3.9	0.8	0.7
39	9.58557	30	9.62043	35	0.37957	9.96514	6	21	9	4.4	0.9	0.8
40	9.58588	31	9.62079	36	0.37921	9.96509	5	20	10	4.8	1.0	0.8
41	9.58618	30	9.62114	35	0.37886	9.96504	5	19	20	9.7	2.0	1.7
42	9.58648	30	9.62150	36	0.37850	9.96498	6	18	30	14.5	3.0	2.5
43	9.58678	30	9.62185	35	0.37815	9.96493	5	17	40	19.3	4.0	3.3
44	9.58709	31	9.62221	36	0.37779	9.96488	5	16	50	24.2	5.0	4.2
45	9.58739	30	9.62256	35	0.37744	9.96483	5	15		6	6	
46	9.58769	30	9.62292	36	0.37708	9.96477	6	14		36	35	
47	9.58799	30	9.62327	35	0.37673	9.96472	5	13	0	3.0	2.9	
48	9.58829	30	9.62362	35	0.37638	9.96467	5	12	1	9.0	8.8	
49	9.58859	30	9.62398	36	0.37602	9.96461	6	11	2	15.0	14.6	
50	9.58889	30	9.62433	35	0.37567	9.96456	5	10	3	21.0	20.4	
51	9.58919	30	9.62468	35	0.37532	9.96451	5	9	4	27.0	26.2	
52	9.58949	30	9.62504	36	0.37496	9.96445	6	8	5	33.0	32.1	
53	9.58979	30	9.62539	35	0.37461	9.96440	5	7		5	5	5
54	9.59009	30	9.62574	35	0.37426	9.96435	5	6		37	36	35
55	9.59039	30	9.62609	35	0.37391	9.96429	6	5				
56	9.59069	29	9.62645	36	0.37355	9.96424	5	4	0	3.7	3.6	3.5
57	9.59098	30	9.62680	35	0.37320	9.96419	5	3	1	11.1	10.8	10.5
58	9.59128	30	9.62715	35	0.37285	9.96413	6	2	2	18.5	18.0	17.5
59	9.59158	30	9.62750	35	0.37250	9.96408	5	1	3	25.9	25.2	24.5
60	9.59188	30	9.62785	35	0.37215	9.96403	5	0	4	33.3	32.4	31.5
	L Cos	d	L Cot	e d	L Tan	L Sin	d			P	P	

L Sin	d	L Tan	cd	L Cot	L Cos	d	P P				
0.59 188	30	0.62 785	35	0.37 215	9.96 403	6	60	36	35	34	
0.59 218	29	0.62 820	35	0.37 180	9.96 397	5	59	1	0.6	0.6	0.6
0.59 247	30	0.62 855	35	0.37 145	9.96 392	5	58	2	1.2	1.2	1.1
0.59 277	30	0.62 890	36	0.37 110	9.96 387	5	57	3	1.8	1.8	1.7
0.59 307	29	0.62 926	35	0.37 074	9.96 381	6	56	4	2.4	2.3	2.3
0.59 336	30	0.62 961	35	0.37 039	9.96 376	5	55	5	3.0	2.9	2.8
0.59 366	30	0.62 996	35	0.37 004	9.96 370	6	54	6	3.6	3.5	3.4
0.59 396	29	0.63 031	35	0.36 969	9.96 365	5	53	7	4.2	4.1	4.0
0.59 425	30	0.63 066	35	0.36 934	9.96 360	5	52	8	4.8	4.7	4.5
0.59 455	29	0.63 101	34	0.36 899	9.96 354	6	51	9	5.4	5.2	5.1
0.59 484	30	0.63 135	35	0.36 865	9.95 349	5	50	10	6.0	5.8	5.7
0.59 514	29	0.63 170	35	0.36 830	9.96 343	6	49	20	12.0	11.7	11.3
0.59 543	30	0.63 205	35	0.36 795	9.96 338	5	48	30	18.0	17.5	17.0
0.59 573	29	0.63 240	35	0.36 760	9.96 333	5	47	40	24.0	23.3	22.7
0.59 602	30	0.63 275	35	0.36 725	9.96 327	6	46	50	30.0	29.2	28.3
0.59 632	29	0.63 310	35	0.36 690	9.96 322	5	45		30	29	28
0.59 661	29	0.63 345	34	0.36 655	9.96 316	6	44	1	0.5	0.5	0.5
0.59 690	30	0.63 379	35	0.36 621	9.96 311	5	43	2	1.0	1.0	0.9
0.59 720	29	0.63 414	35	0.36 586	9.96 305	6	42	3	1.5	1.4	1.4
0.59 749	29	0.63 449	35	0.36 551	9.96 300	5	41	4	2.0	1.9	1.9
0.59 778	30	0.63 484	35	0.36 516	9.96 294	6	40	5	2.5	2.4	2.3
0.59 808	29	0.63 519	34	0.36 481	9.96 289	5	39	6	3.0	2.9	2.8
0.59 837	29	0.63 553	35	0.36 447	9.96 284	5	38	7	3.5	3.4	3.3
0.59 866	29	0.63 588	35	0.36 412	9.96 278	6	37	8	4.0	3.9	3.7
0.59 895	29	0.63 623	34	0.36 377	9.96 273	5	36	9	4.5	4.4	4.2
0.59 924	30	0.63 657	35	0.36 343	9.96 267	6	35	10	5.0	4.8	4.7
0.59 954	29	0.63 692	34	0.36 308	9.96 262	5	34	20	10.0	9.7	9.3
0.59 983	29	0.63 726	35	0.36 274	9.96 256	6	33	30	15.0	14.5	14.0
0.60 012	29	0.63 761	35	0.36 239	9.96 251	5	32	40	20.0	19.3	18.7
0.60 041	29	0.63 796	34	0.36 204	9.96 245	6	31	50	25.0	24.2	23.3
0.60 070	29	0.63 830	35	0.36 170	9.96 240	5	30		6	5	
0.60 099	29	0.63 865	34	0.36 135	9.96 234	6	29	1	0.1	0.1	
0.60 128	29	0.63 899	35	0.36 101	9.96 229	5	28	2	0.2	0.2	
0.60 157	29	0.63 934	34	0.36 066	9.96 223	6	27	3	0.3	0.2	
0.60 186	29	0.63 968	35	0.36 032	9.96 218	5	26	4	0.4	0.3	
0.60 215	29	0.64 003	34	0.35 997	9.96 212	6	25	5	0.5	0.4	
0.60 244	29	0.64 037	35	0.35 963	9.96 207	5	24	6	0.6	0.5	
0.60 273	29	0.64 072	34	0.35 928	9.96 201	6	23	7	0.7	0.6	
0.60 302	29	0.64 106	34	0.35 894	9.96 196	5	22	8	0.8	0.7	
0.60 331	29	0.64 140	35	0.35 860	9.96 190	6	21	9	0.9	0.8	
0.60 359	28	0.64 175	34	0.35 825	9.96 185	5	20	10	1.0	0.8	
0.60 388	29	0.64 209	34	0.35 791	9.96 179	6	19	20	2.0	1.7	
0.60 417	29	0.64 243	35	0.35 757	9.96 174	5	18	30	3.0	2.5	
0.60 446	28	0.64 278	34	0.35 722	9.96 168	6	17	40	4.0	3.3	
0.60 474	29	0.64 312	34	0.35 688	9.96 162	5	16	50	5.0	4.2	
0.60 503	29	0.64 346	35	0.35 654	9.96 157	6	15		6	6	
0.60 532	29	0.64 381	34	0.35 619	9.96 151	5	14		36	35	34
0.60 561	28	0.64 415	34	0.35 585	9.96 146	6	13	0	3.0	2.9	2.8
0.60 589	29	0.64 449	34	0.35 551	9.96 140	5	12	1	9.0	8.8	8.5
0.60 618	28	0.64 483	34	0.35 517	9.96 135	6	11	2	15.0	14.6	14.2
0.60 646	29	0.64 517	35	0.35 483	9.96 129	5	10	3	21.0	20.4	19.8
0.60 675	29	0.64 552	34	0.35 448	9.96 123	6	9	4	27.0	26.2	25.5
0.60 704	28	0.64 586	34	0.35 414	9.96 118	5	8	5	33.0	32.1	31.2
0.60 732	29	0.64 620	34	0.35 380	9.96 112	6	7				
0.60 761	28	0.64 654	34	0.35 346	9.96 107	5	6		5	5	
0.60 789	29	0.64 688	34	0.35 312	9.96 101	6	5		35	34	
0.60 818	28	0.64 722	34	0.35 278	9.96 095	5	4	0			
0.60 846	29	0.64 756	34	0.35 244	9.96 090	6	3	0			
0.60 875	28	0.64 790	34	0.35 210	9.96 084	5	2	0			
0.60 903	28	0.64 824	34	0.35 176	9.96 079	6	1	0			
0.60 931		0.64 858		0.35 142	9.96 073		0				
L Cos	d	L Cot	cd	L Tan	L Sin	d	P P				

	L Sin	d	L Tan	ed	L Cot	L Cos	d		P	P
0	9.60931		9.64858	34	0.35142	9.96073	6	60		
1	9.60960	29	9.64897	34	0.35108	9.96067	5	59		
2	9.60988	28	9.64926	34	0.35074	9.96062	6	58	1	34
3	9.61016	28	9.64960	34	0.35040	9.96056	6	57	2	0.6
4	9.61045	29	9.64994	34	0.35006	9.96050	5	56	3	1.1
5	9.61073	28	9.65028	34	0.34972	9.96045	6	55	4	1.6
6	9.61101	28	9.65062	34	0.34938	9.96039	5	54	5	2.2
7	9.61129	28	9.65096	34	0.34904	9.96034	6	53	6	2.8
8	9.61158	29	9.65130	34	0.34870	9.96028	6	52	7	3.4
9	9.61186	28	9.65164	33	0.34836	9.96022	5	51	8	4.0
10	9.61214	28	9.65197	34	0.34803	9.96017	6	50	9	4.5
11	9.61242	28	9.65231	34	0.34769	9.96011	6	49	10	5.1
12	9.61270	28	9.65265	34	0.34735	9.96005	5	48	20	5.7
13	9.61298	28	9.65299	34	0.34701	9.96000	6	47	30	11.3
14	9.61326	28	9.65333	33	0.34667	9.95994	6	46	40	17.0
15	9.61354	28	9.65366	34	0.34634	9.95988	6	45	50	22.7
16	9.61382	29	9.65400	34	0.34600	9.95982	5	44		28.3
17	9.61411	27	9.65434	33	0.34566	9.95977	6	43		
18	9.61438	28	9.65467	34	0.34533	9.95971	6	42	29	28
19	9.61466	28	9.65501	34	0.34499	9.95965	5	41	1	27
20	9.61494	28	9.65535	33	0.34465	9.95960	6	40	2	0.4
21	9.61522	28	9.65568	34	0.34432	9.95954	6	39	3	0.9
22	9.61550	28	9.65602	34	0.34398	9.95948	6	38	4	0.9
23	9.61578	28	9.65636	33	0.34364	9.95942	5	37	5	1.4
24	9.61606	28	9.65669	34	0.34331	9.95937	6	36	6	1.4
25	9.61634	28	9.65703	33	0.34297	9.95931	6	35	7	1.8
26	9.61662	27	9.65736	34	0.34264	9.95925	5	34	8	2.2
27	9.61689	28	9.65770	33	0.34230	9.95920	6	33	9	2.7
28	9.61717	28	9.65803	34	0.34197	9.95914	6	32	10	3.2
29	9.61745	28	9.65837	33	0.34163	9.95908	6	31	20	3.6
30	9.61773	27	9.65870	34	0.34130	9.95902	5	30	30	4.0
31	9.61800	28	9.65904	33	0.34096	9.95897	6	29	40	4.5
32	9.61828	28	9.65937	34	0.34063	9.95891	6	28	50	9.0
33	9.61856	27	9.65971	33	0.34029	9.95885	6	27		13.5
34	9.61883	28	9.66004	34	0.33996	9.95879	6	26		18.0
35	9.61911	28	9.66038	33	0.33962	9.95873	5	25		22.5
36	9.61939	27	9.66071	33	0.33929	9.95868	6	24		
37	9.61966	28	9.66104	34	0.33896	9.95862	6	23		
38	9.61994	27	9.66138	33	0.33862	9.95856	6	22		
39	9.62021	28	9.66171	33	0.33829	9.95850	6	21		
40	9.62049	27	9.66204	34	0.33796	9.95844	6	20		
41	9.62076	28	9.66238	33	0.33762	9.95839	5	19		
42	9.62104	27	9.66271	33	0.33729	9.95833	6	18		
43	9.62131	28	9.66304	33	0.33696	9.95827	6	17		
44	9.62159	27	9.66337	34	0.33663	9.95821	6	16		
45	9.62186	28	9.66371	33	0.33629	9.95815	6	15		
46	9.62214	27	9.66404	33	0.33596	9.95810	5	14		
47	9.62241	27	9.66437	33	0.33563	9.95804	6	13		
48	9.62268	28	9.66470	33	0.33530	9.95798	6	12		
49	9.62296	27	9.66503	34	0.33497	9.95792	6	11		
50	9.62323	27	9.66537	33	0.33463	9.95786	6	10		
51	9.62350	27	9.66570	33	0.33430	9.95780	6	9		
52	9.62377	28	9.66603	33	0.33397	9.95775	5	8		
53	9.62405	27	9.66636	33	0.33364	9.95769	6	7		
54	9.62432	27	9.66669	33	0.33331	9.95763	6	6		
55	9.62459	27	9.66702	33	0.33298	9.95757	6	5		
56	9.62486	27	9.66735	33	0.33265	9.95751	6	4		
57	9.62513	28	9.66768	33	0.33232	9.95745	6	3		
58	9.62541	27	9.66801	33	0.33199	9.95739	6	2		
59	9.62568	27	9.66834	33	0.33166	9.95733	6	1		
60	9.62595		9.66867	33	0.33133	9.95728	5	0		
	L Cos	d	L Cot	ed	L Tan	L Sin	d		P	P

L Sin	d	L Tan	c d	L Cot	L Cos	d	P P			
0	9.62 595	27	9.66 867	33	0.33 133	9.95 728	60			
1	9.62 622	27	9.66 900	33	0.33 100	9.95 722	6			
2	9.62 649	27	9.66 933	33	0.33 067	9.95 716	6			
3	9.62 676	27	9.66 966	33	0.33 034	9.95 710	6		33	32
4	9.62 703	27	9.66 999	33	0.33 001	9.95 704	6	1	0.6	0.5
5	9.62 730	27	9.67 032	33	0.32 968	9.95 698	6	2	1.1	1.1
6	9.62 757	27	9.67 065	33	0.32 935	9.95 692	6	3	1.6	1.6
7	9.62 784	27	9.67 098	33	0.32 902	9.95 686	6	4	2.2	2.1
8	9.62 811	27	9.67 131	33	0.32 869	9.95 680	6	5	2.8	2.7
9	9.62 838	27	9.67 163	32	0.32 837	9.95 674	6	6	3.3	3.2
10	9.62 865	27	9.67 196	33	0.32 804	9.95 668	6	7	3.8	3.7
11	9.62 892	26	9.67 229	33	0.32 771	9.95 663	5	8	4.4	4.3
12	9.62 918	27	9.67 262	33	0.32 738	9.95 657	6	9	5.0	4.8
13	9.62 945	27	9.67 295	33	0.32 705	9.95 651	6	10	5.5	5.3
14	9.62 972	27	9.67 327	32	0.32 673	9.95 645	6	20	11.0	10.7
15	9.62 999	27	9.67 360	33	0.32 640	9.95 639	6	30	16.5	16.0
16	9.63 026	26	9.67 393	33	0.32 607	9.95 633	6	40	22.0	21.3
17	9.63 052	27	9.67 426	33	0.32 574	9.95 627	6	50	27.5	26.7
18	9.63 079	27	9.67 458	32	0.32 542	9.95 621	6		27	26
19	9.63 106	27	9.67 491	33	0.32 509	9.95 615	6	1	0.4	0.4
20	9.63 133	26	9.67 524	33	0.32 476	9.95 609	6	2	0.9	0.9
21	9.63 159	27	9.67 556	32	0.32 444	9.95 603	6	3	1.4	1.3
22	9.63 186	27	9.67 589	33	0.32 411	9.95 597	6	4	1.8	1.7
23	9.63 213	26	9.67 622	33	0.32 378	9.95 591	6	5	2.2	2.2
24	9.63 239	27	9.67 654	32	0.32 346	9.95 585	6	6	2.7	2.6
25	9.63 266	26	9.67 687	33	0.32 313	9.95 579	6	7	3.2	3.0
26	9.63 292	27	9.67 719	32	0.32 281	9.95 573	6	8	3.6	3.5
27	9.63 319	27	9.67 752	33	0.32 248	9.95 567	6	9	4.0	3.9
28	9.63 345	26	9.67 785	33	0.32 215	9.95 561	6	10	4.5	4.3
29	9.63 372	27	9.67 817	32	0.32 183	9.95 555	6	20	9.0	8.7
30	9.63 398	26	9.67 850	33	0.32 150	9.95 549	6	30	13.5	13.0
31	9.63 425	27	9.67 882	32	0.32 118	9.95 543	6	40	18.0	17.3
32	9.63 451	26	9.67 915	33	0.32 085	9.95 537	6	50	22.5	21.7
33	9.63 478	27	9.67 947	32	0.32 053	9.95 531	6		27	26
34	9.63 504	26	9.67 980	33	0.32 020	9.95 525	6	1	0.1	0.1
35	9.63 531	27	9.68 012	32	0.31 988	9.95 519	6	2	0.2	0.2
36	9.63 557	26	9.68 044	32	0.31 956	9.95 513	6	3	0.4	0.3
37	9.63 583	26	9.68 077	33	0.31 923	9.95 507	6	4	0.5	0.4
38	9.63 610	27	9.68 109	32	0.31 891	9.95 500	7	5	0.6	0.5
39	9.63 636	26	9.68 142	33	0.31 858	9.95 494	6	6	0.7	0.6
40	9.63 662	26	9.68 174	32	0.31 826	9.95 488	6	7	0.8	0.7
41	9.63 689	27	9.68 206	32	0.31 794	9.95 482	6	8	0.9	0.8
42	9.63 715	26	9.68 239	33	0.31 761	9.95 476	6	9	1.0	0.9
43	9.63 741	26	9.68 271	32	0.31 729	9.95 470	6	10	1.2	1.0
44	9.63 767	26	9.68 303	32	0.31 697	9.95 464	6	20	2.3	2.0
45	9.63 794	27	9.68 336	33	0.31 664	9.95 458	6	30	3.5	3.0
46	9.63 820	26	9.68 368	32	0.31 632	9.95 452	6	40	4.7	4.0
47	9.63 846	26	9.68 400	32	0.31 600	9.95 446	6	50	5.8	5.0
48	9.63 872	26	9.68 432	32	0.31 568	9.95 440	6		7	6
49	9.63 898	26	9.68 465	33	0.31 535	9.95 434	7	1	0.1	0.1
50	9.63 924	26	9.68 497	32	0.31 503	9.95 427	6	2	0.2	0.2
51	9.63 950	26	9.68 529	32	0.31 471	9.95 421	6	3	0.4	0.3
52	9.63 976	26	9.68 561	32	0.31 439	9.95 415	6	4	0.5	0.4
53	9.64 002	26	9.68 593	32	0.31 407	9.95 409	6	5	0.6	0.5
54	9.64 028	26	9.68 626	33	0.31 374	9.95 403	6	6	0.7	0.6
55	9.64 054	26	9.68 658	32	0.31 342	9.95 397	6	7	0.8	0.7
56	9.64 080	26	9.68 690	32	0.31 310	9.95 391	7	8	0.9	0.8
57	9.64 106	26	9.68 722	32	0.31 278	9.95 384	6	9	1.0	0.9
58	9.64 132	26	9.68 754	32	0.31 246	9.95 378	6	10	1.2	1.0
59	9.64 158	26	9.68 786	32	0.31 214	9.95 372	6	20	2.3	2.0
60	9.64 184	26	9.68 818	32	0.31 182	9.95 366	6	30	3.5	3.0
	L Cos	d	L Cot	c d	L Tan	L Sin	d	40	4.7	4.0
								50	5.8	5.0

	L Sin	d	L Tan	c d	L Cot	L Cos	d		P	P		
0	9.64 184		9.68 818		0.31 182	9.95 366	60					
1	9.64 210	26	9.68 850	32	0.31 150	9.95 360	6	59	32	31		
2	9.64 236	26	9.68 882	32	0.31 118	9.95 354	6	58	1	0.5	0.5	
3	9.64 262	26	9.68 914	32	0.31 086	9.95 348	6	57	2	1.1	1.0	
4	9.64 288	26	9.68 946	32	0.31 054	9.95 341	7	56	3	1.6	1.6	
5	9.64 314	25	9.68 978	32	0.31 022	9.95 335	6	55	4	2.1	2.1	
6	9.64 339	26	9.69 010	32	0.30 990	9.95 329	6	54	5	2.7	2.6	
7	9.64 365	26	9.69 042	32	0.30 958	9.95 323	6	53	6	3.2	3.1	
8	9.64 391	26	9.69 074	32	0.30 926	9.95 317	6	52	7	3.7	3.6	
9	9.64 417	26	9.69 106	32	0.30 894	9.95 310	7	51	8	4.3	4.1	
10	9.64 442	25	9.69 138	32	0.30 862	9.95 304	6	50	9	4.8	4.6	
11	9.64 468	26	9.69 170	32	0.30 830	9.95 298	6	49	10	5.3	5.2	
12	9.64 494	26	9.69 202	32	0.30 798	9.95 292	6	48	20	10.7	10.3	
13	9.64 519	25	9.69 234	32	0.30 766	9.95 286	6	47	30	16.0	15.5	
14	9.64 545	26	9.69 266	32	0.30 734	9.95 279	7	46	40	21.3	20.7	
15	9.64 571	26	9.69 298	32	0.30 702	9.95 273	6	45	50	26.7	25.8	
16	9.64 596	25	9.69 329	31	0.30 671	9.95 267	6	44				
17	9.64 622	26	9.69 361	32	0.30 639	9.95 261	6	43				
18	9.64 647	25	9.69 393	32	0.30 607	9.95 254	7	42	26	25	24	
19	9.64 673	26	9.69 425	32	0.30 575	9.95 248	6	41	1	0.4	0.4	0.4
20	9.64 698	25	9.69 457	32	0.30 543	9.95 242	6	40	2	0.9	0.8	0.8
21	9.64 724	26	9.69 488	31	0.30 512	9.95 236	6	39	3	1.3	1.2	1.2
22	9.64 749	25	9.69 520	32	0.30 480	9.95 229	7	38	4	1.7	1.7	1.6
23	9.64 775	26	9.69 552	32	0.30 448	9.95 223	6	37	5	2.2	2.1	2.0
24	9.64 800	25	9.69 584	32	0.30 416	9.95 217	6	36	6	2.6	2.5	2.4
25	9.64 826	26	9.69 615	31	0.30 385	9.95 211	6	35	7	3.0	2.9	2.8
26	9.64 851	25	9.69 647	32	0.30 353	9.95 204	6	34	8	3.5	3.3	3.2
27	9.64 877	26	9.69 679	32	0.30 321	9.95 198	7	34	9	3.9	3.8	3.6
28	9.64 902	25	9.69 710	31	0.30 290	9.95 192	6	33	10	4.3	4.2	4.0
29	9.64 927	26	9.69 742	32	0.30 258	9.95 185	6	32	20	8.7	8.3	8.0
30	9.64 953	25	9.69 774	32	0.30 226	9.95 179	7	31	30	13.0	12.5	12.0
31	9.64 978	26	9.69 805	31	0.30 195	9.95 173	6	30	40	17.3	16.7	16.0
32	9.65 003	25	9.69 837	32	0.30 163	9.95 167	6	29	50	21.7	20.8	20.0
33	9.65 029	26	9.69 868	31	0.30 132	9.95 160	6	28				
34	9.65 054	25	9.69 900	32	0.30 100	9.95 154	7	27				
35	9.65 079	26	9.69 932	32	0.30 068	9.95 148	6	26	7	8		
36	9.65 104	25	9.69 963	31	0.30 037	9.95 141	6	25	1	0.1	0.1	
37	9.65 130	26	9.69 995	32	0.30 005	9.95 135	7	24	2	0.2	0.2	
38	9.65 155	25	9.70 026	31	0.29 974	9.95 129	6	23	3	0.4	0.3	
39	9.65 180	26	9.70 058	32	0.29 942	9.95 122	6	22	4	0.5	0.4	
40	9.65 205	25	9.70 089	31	0.29 911	9.95 116	7	21	5	0.6	0.5	
41	9.65 230	26	9.70 121	32	0.29 879	9.95 110	6	20	6	0.7	0.6	
42	9.65 255	25	9.70 152	31	0.29 848	9.95 103	6	19	7	0.8	0.7	
43	9.65 281	26	9.70 184	32	0.29 816	9.95 097	7	18	8	0.9	0.8	
44	9.65 306	25	9.70 215	31	0.29 785	9.95 090	6	17	9	1.0	0.9	
45	9.65 331	26	9.70 247	32	0.29 753	9.95 084	7	16	10	1.2	1.0	
46	9.65 356	25	9.70 278	31	0.29 722	9.95 078	6	15	20	2.3	2.0	
47	9.65 381	26	9.70 309	32	0.29 691	9.95 071	6	14	30	3.5	3.0	
48	9.65 406	25	9.70 341	31	0.29 659	9.95 065	6	13	40	4.7	4.0	
49	9.65 431	26	9.70 372	32	0.29 628	9.95 059	7	12	50	5.8	5.0	
50	9.65 456	25	9.70 404	31	0.29 596	9.95 052	6	11				
51	9.65 481	26	9.70 435	32	0.29 565	9.95 046	7	10				
52	9.65 506	25	9.70 466	31	0.29 534	9.95 039	6	9	7	7	6	
53	9.65 531	26	9.70 498	32	0.29 502	9.95 033	7	8	32	31	32	
54	9.65 556	25	9.70 529	31	0.29 471	9.95 027	6	7	0	2.3	2.2	2.7
55	9.65 580	26	9.70 560	32	0.29 440	9.95 020	6	6	1	6.9	6.6	8.0
56	9.65 605	25	9.70 592	31	0.29 408	9.95 014	7	5	2	11.4	11.1	13.3
57	9.65 630	26	9.70 623	32	0.29 377	9.95 007	6	4	3	16.0	15.5	18.7
58	9.65 655	25	9.70 654	31	0.29 346	9.95 001	7	3	4	20.6	19.9	24.0
59	9.65 680	26	9.70 685	32	0.29 315	9.94 995	6	2	5	25.1	24.4	29.3
60	9.65 705	25	9.70 717	31	0.29 283	9.94 988	7	1	6	29.7	28.8	—
	L Cos	d	L Cot	c d	L Tan	L Sin	d		P	P		

	L Sin	d	L Tan	o d	L Cot	L Cos	d	P P		
0	0.65 705	24	9.70 717	31	0.29 283	9.94 988	6	60		
1	0.65 729	25	9.70 748	31	0.29 252	9.94 982	7	59	32	31
2	0.65 754	25	9.70 779	31	0.29 221	9.94 975	7	58	1	0.5
3	0.65 779	25	9.70 810	31	0.29 190	9.94 969	6	57	2	0.5
4	0.65 804	24	9.70 841	32	0.29 159	9.94 962	7	56	3	1.0
5	0.65 828	25	9.70 873	31	0.29 127	9.94 956	6	55	4	1.5
6	0.65 853	25	9.70 904	31	0.29 096	9.94 949	7	54	5	2.0
7	0.65 878	24	9.70 935	31	0.29 065	9.94 943	6	53	6	2.5
8	0.65 902	25	9.70 966	31	0.29 034	9.94 936	7	52	7	3.0
9	0.65 927	25	9.70 997	31	0.29 003	9.94 930	6	51	8	3.5
10	0.65 952	24	9.71 028	31	0.28 972	9.94 923	7	50	9	4.0
11	0.65 976	25	9.71 059	31	0.28 941	9.94 917	6	49	10	4.5
12	0.66 001	24	9.71 090	31	0.28 910	9.94 911	6	48	20	5.0
13	0.66 025	25	9.71 121	32	0.28 879	9.94 904	7	47	30	10.7
14	0.66 050	25	9.71 153	31	0.28 847	9.94 898	6	46	40	15.5
15	0.66 075	24	9.71 184	31	0.28 816	9.94 891	7	45	50	20.7
16	0.66 099	25	9.71 215	31	0.28 785	9.94 885	6	44	50	25.8
17	0.66 124	24	9.71 246	31	0.28 754	9.94 878	7	43		25
18	0.66 148	25	9.71 277	31	0.28 723	9.94 871	7	42		24
19	0.66 173	24	9.71 308	31	0.28 692	9.94 865	6	41	1	23
20	0.66 197	24	9.71 339	31	0.28 661	9.94 858	7	40	2	0.4
21	0.66 221	25	9.71 370	31	0.28 630	9.94 852	6	39	3	0.8
22	0.66 246	24	9.71 401	30	0.28 599	9.94 845	7	38	4	1.2
23	0.66 270	25	9.71 431	31	0.28 569	9.94 839	6	37	5	1.6
24	0.66 295	24	9.71 462	31	0.28 538	9.94 832	7	36	6	1.9
25	0.66 319	24	9.71 493	31	0.28 507	9.94 826	6	35	7	2.3
26	0.66 343	25	9.71 524	31	0.28 476	9.94 819	7	34	8	2.7
27	0.66 368	24	9.71 555	31	0.28 445	9.94 813	6	33	9	3.1
28	0.66 392	24	9.71 586	31	0.28 414	9.94 806	7	32	10	3.4
29	0.66 416	25	9.71 617	31	0.28 383	9.94 799	6	31	20	3.8
30	0.66 441	24	9.71 648	31	0.28 352	9.94 793	7	30	30	7.7
31	0.66 465	24	9.71 679	30	0.28 321	9.94 786	6	29	40	11.5
32	0.66 489	24	9.71 709	31	0.28 291	9.94 780	7	28	50	15.3
33	0.66 513	24	9.71 740	31	0.28 260	9.94 773	6	27	50	19.2
34	0.66 537	25	9.71 771	31	0.28 229	9.94 767	7	26		7
35	0.66 562	24	9.71 802	31	0.28 198	9.94 760	6	25		8
36	0.66 586	24	9.71 833	30	0.28 167	9.94 753	7	24	1	0.1
37	0.66 610	24	9.71 863	31	0.28 137	9.94 747	6	23	2	0.2
38	0.66 634	24	9.71 894	31	0.28 106	9.94 740	7	22	3	0.3
39	0.66 658	24	9.71 925	30	0.28 075	9.94 734	6	21	4	0.4
40	0.66 682	24	9.71 955	31	0.28 045	9.94 727	7	20	5	0.5
41	0.66 706	25	9.71 986	31	0.28 014	9.94 720	6	19	6	0.6
42	0.66 731	24	9.72 017	31	0.27 983	9.94 714	7	18	7	0.7
43	0.66 755	24	9.72 048	30	0.27 952	9.94 707	6	17	8	0.8
44	0.66 779	24	9.72 078	31	0.27 922	9.94 700	7	16	9	0.9
45	0.66 803	24	9.72 109	31	0.27 891	9.94 694	6	15	10	1.0
46	0.66 827	24	9.72 140	30	0.27 860	9.94 687	7	14	20	2.0
47	0.66 851	24	9.72 170	31	0.27 830	9.94 680	6	13	30	3.0
48	0.66 875	24	9.72 201	30	0.27 799	9.94 674	7	12	40	4.0
49	0.66 899	24	9.72 231	31	0.27 769	9.94 667	6	11	50	5.0
50	0.66 922	23	9.72 262	31	0.27 738	9.94 660	7	10		
51	0.66 946	24	9.72 293	30	0.27 707	9.94 654	6	9		
52	0.66 970	24	9.72 323	31	0.27 677	9.94 647	7	8		
53	0.66 994	24	9.72 354	30	0.27 646	9.94 640	6	7		
54	0.67 018	24	9.72 384	31	0.27 616	9.94 634	7	6		
55	0.67 042	24	9.72 415	30	0.27 585	9.94 627	6	5		
56	0.67 066	24	9.72 445	31	0.27 555	9.94 620	7	4		
57	0.67 090	24	9.72 476	30	0.27 524	9.94 614	6	3		
58	0.67 113	23	9.72 506	31	0.27 494	9.94 607	7	2		
59	0.67 137	24	9.72 537	30	0.27 463	9.94 600	6	1		
60	0.67 161	24	9.72 567	30	0.27 433	9.94 593	7	0		
	L Cos	d	L Cot	c d	L Tan	L Sin	d			

	L Sin	d	L Tan	c d	L Cot	L Cos	d		P	P
0	9.67 161		9.72 567		0.27 433	9.94 593	6	60		
1	9.67 185	24	9.72 598	31	0.27 402	9.94 587	7	59	31	30
2	9.67 208	23	9.72 628	30	0.27 372	9.94 580	7	58	1	0.5
3	9.67 232	24	9.72 659	31	0.27 341	9.94 573	6	57	2	1.0
4	9.67 256	24	9.72 689	30	0.27 311	9.94 567	7	56	3	1.6
5	9.67 280	24	9.72 720	31	0.27 280	9.94 560	7	55	4	2.1
6	9.67 303	23	9.72 750	30	0.27 250	9.94 553	7	54	5	2.6
7	9.67 327	24	9.72 780	30	0.27 220	9.94 546	6	53	6	3.1
8	9.67 350	23	9.72 811	31	0.27 189	9.94 540	7	52	7	3.6
9	9.67 374	24	9.72 841	30	0.27 159	9.94 533	7	51	8	4.1
10	9.67 398	24	9.72 872	31	0.27 128	9.94 526	7	50	9	4.6
11	9.67 421	23	9.72 902	30	0.27 098	9.94 519	6	49	10	5.2
12	9.67 445	24	9.72 932	30	0.27 068	9.94 513	6	48	20	10.3
13	9.67 468	23	9.72 963	31	0.27 037	9.94 506	7	47	30	15.5
14	9.67 492	24	9.72 993	30	0.27 007	9.94 499	7	46	40	20.7
15	9.67 515	23	9.73 023	30	0.26 977	9.94 492	7	45	50	25.8
16	9.67 539	24	9.73 054	31	0.26 946	9.94 485	6	44		
17	9.67 562	23	9.73 084	30	0.26 916	9.94 479	7	43	24	23
18	9.67 586	24	9.73 114	30	0.26 886	9.94 472	7	42	1	0.4
19	9.67 609	23	9.73 144	30	0.26 856	9.94 465	7	41	2	0.8
20	9.67 633	24	9.73 175	31	0.26 825	9.94 458	7	40	3	1.2
21	9.67 656	23	9.73 205	30	0.26 795	9.94 451	7	39	4	1.6
22	9.67 680	24	9.73 235	30	0.26 765	9.94 445	6	38	5	2.0
23	9.67 703	23	9.73 265	30	0.26 735	9.94 438	7	37	6	2.4
24	9.67 726	23	9.73 295	30	0.26 705	9.94 431	7	36	7	2.8
25	9.67 750	24	9.73 326	31	0.26 674	9.94 424	7	35	8	3.2
26	9.67 773	23	9.73 356	30	0.26 644	9.94 417	7	34	9	3.6
27	9.67 796	23	9.73 386	30	0.26 614	9.94 410	7	33	10	4.0
28	9.67 820	24	9.73 416	30	0.26 584	9.94 404	6	32	20	8.0
29	9.67 843	23	9.73 446	30	0.26 554	9.94 397	7	31	30	12.0
30	9.67 866	23	9.73 476	30	0.26 524	9.94 390	7	30	40	16.0
31	9.67 890	24	9.73 507	31	0.26 493	9.94 383	7	29	50	20.0
32	9.67 913	23	9.73 537	30	0.26 463	9.94 376	7	28		
33	9.67 936	23	9.73 567	30	0.26 433	9.94 369	7	27	7	6
34	9.67 959	23	9.73 597	30	0.26 403	9.94 362	7	26	1	0.1
35	9.67 982	23	9.73 627	30	0.26 373	9.94 355	7	25	2	0.2
36	9.68 006	24	9.73 657	30	0.26 343	9.94 349	6	24	3	0.4
37	9.68 029	23	9.73 687	30	0.26 313	9.94 342	7	23	4	0.5
38	9.68 052	23	9.73 717	30	0.26 283	9.94 335	7	22	5	0.6
39	9.68 075	23	9.73 747	30	0.26 253	9.94 328	7	21	6	0.7
40	9.68 098	23	9.73 777	30	0.26 223	9.94 321	7	20	7	0.8
41	9.68 121	23	9.73 807	30	0.26 193	9.94 314	7	19	8	0.9
42	9.68 144	23	9.73 837	30	0.26 163	9.94 307	7	18	9	1.0
43	9.68 167	23	9.73 867	30	0.26 133	9.94 300	7	17	10	1.2
44	9.68 190	23	9.73 897	30	0.26 103	9.94 293	7	16	20	2.3
45	9.68 213	23	9.73 927	30	0.26 073	9.94 286	7	15	30	3.5
46	9.68 237	24	9.73 957	30	0.26 043	9.94 279	7	14	40	4.7
47	9.68 260	23	9.73 987	30	0.26 013	9.94 273	6	13	50	5.8
48	9.68 283	23	9.74 017	30	0.25 983	9.94 266	7	12		
49	9.68 305	22	9.74 047	30	0.25 953	9.94 259	7	11		
50	9.68 328	23	9.74 077	30	0.25 923	9.94 252	7	10	7	6
51	9.68 351	23	9.74 107	30	0.25 893	9.94 245	7	9	31	31
52	9.68 374	23	9.74 137	30	0.25 863	9.94 238	7	8	31	30
53	9.68 397	23	9.74 166	29	0.25 834	9.94 231	7	7	0	2.2
54	9.68 420	23	9.74 196	30	0.25 804	9.94 224	7	6	1	6.6
55	9.68 443	23	9.74 226	30	0.25 774	9.94 217	7	5	2	11.1
56	9.68 466	23	9.74 256	30	0.25 744	9.94 210	7	4	3	15.5
57	9.68 489	23	9.74 286	30	0.25 714	9.94 203	7	3	4	19.9
58	9.68 512	23	9.74 316	30	0.25 684	9.94 196	7	2	5	24.4
59	9.68 534	22	9.74 345	29	0.25 655	9.94 189	7	1	6	28.8
60	9.68 557	23	9.74 375	30	0.25 625	9.94 182	7	0	7	—
	L Cos	d	L Cot	c d	L Tan	L Sin	d		P	P

L Sin		d	L Tan	e d	L Cot	L Cos	d	P P				
0	0.68 557	23	0.74 375		0.25 625	9.94 182		60				
1	0.68 480	23	0.74 405	30	0.25 595	9.94 175	7	59				
2	0.68 603	22	0.74 435	30	0.25 565	9.94 168	7	58				
3	0.68 625	23	0.74 465	30	0.25 535	9.94 161	7	57	30	29	23	
4	0.68 648	23	0.74 494	29	0.25 506	9.94 154	7	56	1	0.5	0.5	0.4
5	0.68 671	23	0.74 524	30	0.25 476	9.94 147	7	55	2	1.0	1.0	0.8
6	0.68 694	22	0.74 554	30	0.25 446	9.94 140	7	54	3	1.5	1.4	1.2
7	0.68 716	23	0.74 583	29	0.25 417	9.94 133	7	53	4	2.0	1.9	1.5
8	0.68 739	23	0.74 613	30	0.25 387	9.94 126	7	52	5	2.5	2.4	1.9
9	0.68 762	22	0.74 643	30	0.25 357	9.94 119	7	51	6	3.0	2.9	2.3
10	0.68 784	23	0.74 673	29	0.25 327	9.94 112	7	50	7	3.5	3.4	2.7
11	0.68 807	22	0.74 702	29	0.25 298	9.94 105	7	49	8	4.0	3.9	3.1
12	0.68 829	23	0.74 732	30	0.25 268	9.94 098	7	48	9	4.5	4.4	3.4
13	0.68 852	23	0.74 762	30	0.25 238	9.94 090	8	47	10	5.0	4.8	3.8
14	0.68 875	22	0.74 791	29	0.25 209	9.94 083	7	46	20	10.0	9.7	7.7
15	0.68 897	23	0.74 821	30	0.25 179	9.94 076	7	45	30	15.0	14.5	11.5
16	0.68 920	22	0.74 851	29	0.25 149	9.94 069	7	44	40	20.0	19.3	15.3
17	0.68 942	23	0.74 880	29	0.25 120	9.94 062	7	43	50	25.0	24.2	19.2
18	0.68 965	22	0.74 910	30	0.25 090	9.94 055	7	42				
19	0.68 987	23	0.74 939	29	0.25 061	9.94 048	7	41				
20	0.69 010	22	0.74 969	30	0.25 031	9.94 041	7	40	22	8	7	
21	0.69 032	23	0.74 998	29	0.25 002	9.94 034	7	39	1	0.4	0.1	0.1
22	0.69 055	22	0.75 028	30	0.24 972	9.94 027	7	38	2	0.7	0.3	0.2
23	0.69 077	23	0.75 058	30	0.24 942	9.94 020	7	37	3	1.1	0.4	0.4
24	0.69 100	22	0.75 087	29	0.24 913	9.94 012	8	36	4	1.5	0.5	0.5
25	0.69 122	22	0.75 117	30	0.24 883	9.94 005	7	35	5	1.8	0.7	0.6
26	0.69 144	23	0.75 146	29	0.24 854	9.93 998	7	34	6	2.2	0.8	0.7
27	0.69 167	22	0.75 176	30	0.24 824	9.93 991	7	33	7	2.6	0.9	0.8
28	0.69 189	23	0.75 205	29	0.24 795	9.93 984	7	32	8	2.9	1.1	0.9
29	0.69 212	22	0.75 235	30	0.24 765	9.93 977	7	31	9	3.3	1.2	1.0
30	0.69 234	22	0.75 264	29	0.24 736	9.93 970	7	30	10	3.7	1.3	1.2
31	0.69 256	23	0.75 294	30	0.24 706	9.93 963	7	29	20	7.3	2.7	2.3
32	0.69 279	22	0.75 323	29	0.24 677	9.93 955	7	28	30	11.0	4.0	3.5
33	0.69 301	22	0.75 353	30	0.24 647	9.93 948	8	27	40	14.7	5.3	4.7
34	0.69 323	22	0.75 382	29	0.24 618	9.93 941	7	26	50	18.3	6.7	5.8
35	0.69 345	22	0.75 411	29	0.24 589	9.93 934	7	25				
36	0.69 368	23	0.75 441	30	0.24 559	9.93 927	7	24				
37	0.69 390	22	0.75 470	29	0.24 530	9.93 920	7	23				
38	0.69 412	22	0.75 500	30	0.24 500	9.93 912	8	22				
39	0.69 434	22	0.75 529	29	0.24 471	9.93 905	7	21				
40	0.69 456	22	0.75 558	29	0.24 442	9.93 898	7	20	0	1.9	1.8	
41	0.69 479	23	0.75 588	30	0.24 412	9.93 891	7	19	1	5.6	5.4	
42	0.69 501	22	0.75 617	29	0.24 383	9.93 884	7	18	2	9.4	9.1	
43	0.69 523	22	0.75 647	30	0.24 353	9.93 876	8	17	3	13.1	12.7	
44	0.69 545	22	0.75 676	29	0.24 324	9.93 869	7	16	4	16.9	16.3	
45	0.69 567	22	0.75 705	29	0.24 295	9.93 862	7	15	5	20.6	19.9	
46	0.69 589	22	0.75 735	30	0.24 265	9.93 855	7	14	6	24.4	23.6	
47	0.69 611	22	0.75 764	29	0.24 236	9.93 847	8	13	7	28.1	27.2	
48	0.69 633	22	0.75 793	29	0.24 207	9.93 840	7	12				
49	0.69 655	22	0.75 822	29	0.24 178	9.93 833	7	11				
50	0.69 677	22	0.75 852	30	0.24 148	9.93 826	7	10	7	7	7	
51	0.69 699	22	0.75 881	29	0.24 119	9.93 819	7	9	30	30	29	
52	0.69 721	22	0.75 910	29	0.24 090	9.93 811	8	8	0	2.1	2.1	
53	0.69 743	22	0.75 939	29	0.24 061	9.93 804	7	7	1	6.4	6.2	
54	0.69 765	22	0.75 969	30	0.24 031	9.93 797	7	6	2	10.7	10.4	
55	0.69 787	22	0.75 998	29	0.24 002	9.93 789	8	5	3	15.0	14.5	
56	0.69 809	22	0.76 027	29	0.23 973	9.93 782	7	4	4	19.3	18.6	
57	0.69 831	22	0.76 056	29	0.23 944	9.93 775	7	3	5	23.6	22.8	
58	0.69 853	22	0.76 086	30	0.23 914	9.93 768	7	2	6	27.9	26.9	
59	0.69 875	22	0.76 115	29	0.23 885	9.93 760	7	1	7			
60	0.69 897	22	0.76 144	29	0.23 856	9.93 753	7	0				

	L Sin	d	L Tan	e d	L Cot	L Cos	d		P	P
0	9.67 161		9.72 567		0.27 433	9.94 593	60			
1	9.67 185	24	9.72 598	31	0.27 402	9.94 587	7	59	31	30
2	9.67 208	23	9.72 628	30	0.27 372	9.94 580	7	58	1	0.5
3	9.67 232	24	9.72 659	31	0.27 341	9.94 573	6	57	2	1.0
4	9.67 256	24	9.72 689	30	0.27 311	9.94 567	7	56	3	1.6
5	9.67 280	24	9.72 720	31	0.27 280	9.94 560	7	55	4	2.1
6	9.67 303	23	9.72 750	30	0.27 250	9.94 553	7	54	5	2.6
7	9.67 327	24	9.72 780	30	0.27 220	9.94 546	7	53	6	3.1
8	9.67 350	23	9.72 811	31	0.27 189	9.94 540	7	52	7	3.6
9	9.67 374	24	9.72 841	30	0.27 159	9.94 533	7	51	8	4.1
10	9.67 398	24	9.72 872	31	0.27 128	9.94 526	7	50	9	4.6
11	9.67 421	23	9.72 902	30	0.27 098	9.94 519	7	49	10	5.2
12	9.67 445	24	9.72 932	30	0.27 068	9.94 513	6	48	20	10.3
13	9.67 468	23	9.72 963	31	0.27 037	9.94 506	7	47	30	15.5
14	9.67 492	24	9.72 993	30	0.27 007	9.94 499	7	46	40	20.7
15	9.67 515	23	9.73 023	30	0.26 977	9.94 492	7	45	50	25.8
16	9.67 539	24	9.73 054	31	0.26 946	9.94 485	7	44		
17	9.67 562	23	9.73 084	30	0.26 916	9.94 479	6	43		24
18	9.67 586	24	9.73 114	30	0.26 886	9.94 472	7	42	1	0.4
19	9.67 609	23	9.73 144	30	0.26 856	9.94 465	7	41	2	0.8
20	9.67 633	24	9.73 175	31	0.26 825	9.94 458	7	40	3	1.2
21	9.67 656	23	9.73 205	30	0.26 795	9.94 451	7	39	4	1.6
22	9.67 680	24	9.73 235	30	0.26 765	9.94 445	6	38	5	2.0
23	9.67 703	23	9.73 265	30	0.26 735	9.94 438	7	37	6	2.4
24	9.67 726	23	9.73 295	30	0.26 705	9.94 431	7	36	7	2.8
25	9.67 750	24	9.73 326	31	0.26 674	9.94 424	7	35	8	3.2
26	9.67 773	23	9.73 356	30	0.26 644	9.94 417	7	34	9	3.6
27	9.67 796	23	9.73 386	30	0.26 614	9.94 410	7	33	10	4.0
28	9.67 820	24	9.73 416	30	0.26 584	9.94 404	6	32	20	8.0
29	9.67 843	23	9.73 446	30	0.26 554	9.94 397	7	31	30	12.0
30	9.67 866	23	9.73 476	30	0.26 524	9.94 390	7	30	40	16.0
31	9.67 890	24	9.73 507	31	0.26 493	9.94 383	7	29	50	20.0
32	9.67 913	23	9.73 537	30	0.26 463	9.94 376	7	28		
33	9.67 936	23	9.73 567	30	0.26 433	9.94 369	7	27		7
34	9.67 959	23	9.73 597	30	0.26 403	9.94 362	7	26	1	0.1
35	9.67 982	23	9.73 627	30	0.26 373	9.94 355	7	25	2	0.2
36	9.68 006	24	9.73 657	30	0.26 343	9.94 349	6	24	3	0.4
37	9.68 029	23	9.73 687	30	0.26 313	9.94 342	7	23	4	0.5
38	9.68 052	23	9.73 717	30	0.26 283	9.94 335	7	22	5	0.6
39	9.68 075	23	9.73 747	30	0.26 253	9.94 328	7	21	6	0.7
40	9.68 098	23	9.73 777	30	0.26 223	9.94 321	7	20	7	0.8
41	9.68 121	23	9.73 807	30	0.26 193	9.94 314	7	19	8	0.9
42	9.68 144	23	9.73 837	30	0.26 163	9.94 307	7	18	9	1.0
43	9.68 167	23	9.73 867	30	0.26 133	9.94 300	7	17	10	1.2
44	9.68 190	23	9.73 897	30	0.26 103	9.94 293	7	16	20	2.3
45	9.68 213	23	9.73 927	30	0.26 073	9.94 286	7	15	30	3.5
46	9.68 237	24	9.73 957	30	0.26 043	9.94 279	7	14	40	4.7
47	9.68 260	23	9.73 987	30	0.26 013	9.94 273	7	13	50	5.8
48	9.68 283	23	9.74 017	30	0.25 983	9.94 266	6	12		
49	9.68 305	22	9.74 047	30	0.25 953	9.94 259	7	11		
50	9.68 328	23	9.74 077	30	0.25 923	9.94 252	7	10		
51	9.68 351	23	9.74 107	30	0.25 893	9.94 245	7	9		
52	9.68 374	23	9.74 137	30	0.25 863	9.94 238	7	8		
53	9.68 397	23	9.74 166	29	0.25 834	9.94 231	7	7	0	2.2
54	9.68 420	23	9.74 196	30	0.25 804	9.94 224	7	6	1	6.6
55	9.68 443	23	9.74 226	30	0.25 774	9.94 217	7	5	2	11.1
56	9.68 466	23	9.74 256	30	0.25 744	9.94 210	7	4	3	15.5
57	9.68 489	23	9.74 286	30	0.25 714	9.94 203	7	3	4	19.9
58	9.68 512	23	9.74 316	30	0.25 684	9.94 196	7	2	5	24.4
59	9.68 534	22	9.74 345	29	0.25 655	9.94 189	7	1	6	28.8
60	9.68 557	23	9.74 375	30	0.25 625	9.94 182	7	0	7	—

L Sin		d	L Tan	c d	L Cot	L Cos	d	P P		
0	9.68 557	23	9.74 375		0.25 625	9.94 182	60			
1	9.68 580	23	9.74 405	30	0.25 595	9.94 175	7			
2	9.68 603	22	9.74 435	30	0.25 565	9.94 168	7			
3	9.68 625	23	9.74 465	30	0.25 535	9.94 161	7			
4	9.68 648	23	9.74 494	29	0.25 506	9.94 154	7			
5	9.68 671	23	9.74 524	30	0.25 476	9.94 147	7			
6	9.68 694	22	9.74 554	30	0.25 446	9.94 140	7			
7	9.68 716	23	9.74 583	29	0.25 417	9.94 133	7			
8	9.68 739	23	9.74 613	30	0.25 387	9.94 126	7			
9	9.68 762	22	9.74 643	30	0.25 357	9.94 119	7			
10	9.68 784	23	9.74 673	30	0.25 327	9.94 112	7			
11	9.68 807	22	9.74 702	29	0.25 298	9.94 105	7			
12	9.68 829	23	9.74 732	30	0.25 268	9.94 098	7			
13	9.68 852	23	9.74 762	30	0.25 238	9.94 090	8			
14	9.68 875	22	9.74 791	29	0.25 209	9.94 083	7			
15	9.68 897	23	9.74 821	30	0.25 179	9.94 076	7			
16	9.68 920	22	9.74 851	30	0.25 149	9.94 069	7			
17	9.68 942	23	9.74 880	29	0.25 120	9.94 062	7			
18	9.68 965	22	9.74 910	30	0.25 090	9.94 055	7			
19	9.68 987	23	9.74 939	29	0.25 061	9.94 048	7			
20	9.69 010	22	9.74 969	30	0.25 031	9.94 041	7			
21	9.69 032	23	9.74 998	29	0.25 002	9.94 034	7			
22	9.69 055	22	9.75 028	30	0.24 972	9.94 027	7			
23	9.69 077	23	9.75 058	30	0.24 942	9.94 020	7			
24	9.69 100	23	9.75 087	29	0.24 913	9.94 012	8			
25	9.69 122	22	9.75 117	30	0.24 883	9.94 005	7			
26	9.69 144	22	9.75 146	29	0.24 854	9.93 998	7			
27	9.69 167	23	9.75 176	30	0.24 824	9.93 991	7			
28	9.69 189	22	9.75 205	29	0.24 795	9.93 984	7			
29	9.69 212	23	9.75 235	30	0.24 765	9.93 977	7			
30	9.69 234	22	9.75 264	29	0.24 736	9.93 970	7			
31	9.69 256	22	9.75 294	30	0.24 706	9.93 963	7			
32	9.69 279	23	9.75 323	29	0.24 677	9.93 955	8			
33	9.69 301	22	9.75 353	30	0.24 647	9.93 948	7			
34	9.69 323	22	9.75 382	29	0.24 618	9.93 941	7			
35	9.69 345	22	9.75 411	29	0.24 589	9.93 934	7			
36	9.69 368	23	9.75 441	30	0.24 559	9.93 927	7			
37	9.69 390	22	9.75 470	29	0.24 530	9.93 920	7			
38	9.69 412	22	9.75 500	30	0.24 500	9.93 912	8			
39	9.69 434	22	9.75 529	29	0.24 471	9.93 905	7			
40	9.69 456	22	9.75 558	29	0.24 442	9.93 898	7			
41	9.69 479	23	9.75 588	30	0.24 412	9.93 891	7			
42	9.69 501	22	9.75 617	29	0.24 383	9.93 884	7			
43	9.69 523	22	9.75 647	30	0.24 353	9.93 876	8			
44	9.69 545	22	9.75 676	29	0.24 324	9.93 869	7			
45	9.69 567	22	9.75 705	29	0.24 295	9.93 862	7			
46	9.69 589	22	9.75 735	30	0.24 265	9.93 855	7			
47	9.69 611	22	9.75 764	29	0.24 236	9.93 847	8			
48	9.69 633	22	9.75 793	29	0.24 207	9.93 840	7			
49	9.69 655	22	9.75 822	29	0.24 178	9.93 833	7			
50	9.69 677	22	9.75 852	30	0.24 148	9.93 826	7			
51	9.69 699	22	9.75 881	29	0.24 119	9.93 819	7			
52	9.69 721	22	9.75 910	29	0.24 090	9.93 811	8			
53	9.69 743	22	9.75 939	29	0.24 061	9.93 804	7			
54	9.69 765	22	9.75 969	30	0.24 031	9.93 797	8			
55	9.69 787	22	9.75 998	29	0.24 002	9.93 789	7			
56	9.69 809	22	9.76 027	29	0.23 973	9.93 782	7			
57	9.69 831	22	9.76 056	29	0.23 944	9.93 775	7			
58	9.69 853	22	9.76 086	30	0.23 914	9.93 768	7			
59	9.69 875	22	9.76 115	29	0.23 885	9.93 760	8			
60	9.69 897	22	9.76 144	29	0.23 856	9.93 753	7			
	L Cos	d	L Cot	c d	L Tan	L Sin	d			

	L Sin	d	L Tan	c d	L Cot	L Cos	d	P P		
0	9.69 897		9.76 144		0.23 856	9.93 753	60			
1	9.69 919	22	9.76 173	29	0.23 827	9.93 746	59	30	29	28
2	9.69 941	22	9.76 202	29	0.23 798	9.93 738	58	1	0.5	0.3
3	9.69 963	22	9.76 231	29	0.23 769	9.93 731	57	2	1.0	1.0
4	9.69 984	21	9.76 261	30	0.23 739	9.93 724	56	3	1.5	1.4
5	9.70 006	22	9.76 290	29	0.23 710	9.93 717	55	4	2.0	1.9
6	9.70 028	22	9.76 319	29	0.23 681	9.93 709	54	5	2.5	2.4
7	9.70 050	22	9.76 348	29	0.23 652	9.93 702	53	6	3.0	2.9
8	9.70 072	22	9.76 377	29	0.23 623	9.93 695	52	7	3.5	3.4
9	9.70 093	21	9.76 406	29	0.23 594	9.93 687	51	8	4.0	3.9
10	9.70 115	22	9.76 435	29	0.23 565	9.93 680	50	9	4.5	4.4
11	9.70 137	22	9.76 464	29	0.23 536	9.93 673	49	10	5.0	4.8
12	9.70 159	22	9.76 493	29	0.23 507	9.93 665	48	20	10.0	9.7
13	9.70 180	21	9.76 522	29	0.23 478	9.93 658	47	30	15.0	14.5
14	9.70 202	22	9.76 551	29	0.23 449	9.93 650	46	40	20.0	19.3
15	9.70 224	22	9.76 580	29	0.23 420	9.93 643	45	50	25.0	24.2
16	9.70 245	21	9.76 609	29	0.23 391	9.93 636	44			
17	9.70 267	22	9.76 639	30	0.23 361	9.93 628	43		22	21
18	9.70 288	21	9.76 668	29	0.23 332	9.93 621	42	1	0.4	0.4
19	9.70 310	22	9.76 697	29	0.23 303	9.93 614	41	2	0.7	0.7
20	9.70 332	22	9.76 725	28	0.23 275	9.93 606	40	3	1.1	1.0
21	9.70 353	21	9.76 754	29	0.23 246	9.93 599	39	4	1.5	1.4
22	9.70 375	22	9.76 783	29	0.23 217	9.93 591	38	5	1.8	1.8
23	9.70 396	21	9.76 812	29	0.23 188	9.93 584	37	6	2.2	2.1
24	9.70 418	22	9.76 841	29	0.23 159	9.93 577	36	7	2.6	2.4
25	9.70 439	21	9.76 870	29	0.23 130	9.93 569	35	8	2.9	2.8
26	9.70 461	22	9.76 899	29	0.23 101	9.93 562	34	9	3.3	3.2
27	9.70 482	21	9.76 928	29	0.23 072	9.93 554	33	10	3.7	3.5
28	9.70 504	22	9.76 957	29	0.23 043	9.93 547	32	20	7.3	7.0
29	9.70 525	21	9.76 986	29	0.23 014	9.93 539	31	30	11.0	10.5
30	9.70 547	22	9.77 015	29	0.22 985	9.93 532	30	40	14.7	14.0
31	9.70 568	21	9.77 044	29	0.22 956	9.93 525	29	50	18.3	17.5
32	9.70 590	22	9.77 073	29	0.22 927	9.93 517	28			
33	9.70 611	21	9.77 101	28	0.22 899	9.93 510	27		8	7
34	9.70 633	22	9.77 130	29	0.22 870	9.93 502	26	1	0.1	0.1
35	9.70 654	21	9.77 159	29	0.22 841	9.93 495	25	2	0.3	0.2
36	9.70 675	21	9.77 188	29	0.22 812	9.93 487	24	3	0.4	0.4
37	9.70 697	22	9.77 217	29	0.22 783	9.93 480	23	4	0.5	0.5
38	9.70 718	21	9.77 246	29	0.22 754	9.93 472	22	5	0.7	0.6
39	9.70 739	21	9.77 274	28	0.22 726	9.93 465	21	6	0.8	0.7
40	9.70 761	22	9.77 303	29	0.22 697	9.93 457	20	7	0.9	0.8
41	9.70 782	21	9.77 332	29	0.22 668	9.93 450	19	8	1.1	0.9
42	9.70 803	21	9.77 361	29	0.22 639	9.93 442	18	9	1.2	1.0
43	9.70 824	21	9.77 390	29	0.22 610	9.93 435	17	10	1.3	1.2
44	9.70 846	22	9.77 418	28	0.22 582	9.93 427	16	20	2.7	2.3
45	9.70 867	21	9.77 447	29	0.22 553	9.93 420	15	30	4.0	3.5
46	9.70 888	21	9.77 476	29	0.22 524	9.93 412	14	40	5.3	4.7
47	9.70 909	21	9.77 505	29	0.22 495	9.93 405	13	50	6.7	5.8
48	9.70 931	22	9.77 533	28	0.22 467	9.93 397	12			
49	9.70 952	21	9.77 562	29	0.22 438	9.93 390	11		7	7
50	9.70 973	21	9.77 591	29	0.22 409	9.93 382	10		30	29
51	9.70 994	21	9.77 619	28	0.22 381	9.93 375	9		28	28
52	9.71 015	21	9.77 648	29	0.22 352	9.93 367	8	0	2.1	2.1
53	9.71 036	21	9.77 677	29	0.22 323	9.93 360	7	1	6.4	6.2
54	9.71 058	22	9.77 706	29	0.22 294	9.93 352	6	2	10.7	10.4
55	9.71 079	21	9.77 734	28	0.22 266	9.93 344	5	3	15.0	14.5
56	9.71 100	21	9.77 763	29	0.22 237	9.93 337	4	4	19.3	18.6
57	9.71 121	21	9.77 791	28	0.22 209	9.93 329	3	5	23.6	22.8
58	9.71 142	21	9.77 820	29	0.22 180	9.93 322	2	6	27.9	26.9
59	9.71 163	21	9.77 849	29	0.22 151	9.93 314	1	7		
60	9.71 184	21	9.77 877	28	0.22 123	9.93 307	0			
	L Cos	d	L Cot	c d	L Tan	L Sin	d	P P		

	L Sin	d	L Tan	cd	L Cot	L Cos	d		P	P
0	9.71 184	21	9.77 877	29	0.22 123	9.93 307	8	60		
1	9.71 205	21	9.77 906	29	0.22 094	9.93 299	8	59		
2	9.71 226	21	9.77 935	28	0.22 065	9.93 291	8	58		29 28
3	9.71 247	21	9.77 963	29	0.22 037	9.93 284	7	57	1	0.5 0.5
4	9.71 268	21	9.77 992	28	0.22 008	9.93 276	8	56	2	1.0 0.9
5	9.71 289	21	9.78 020	29	0.21 980	9.93 269	7	55	3	1.4 1.4
6	9.71 310	21	9.78 049	28	0.21 951	9.93 261	8	54	4	1.9 1.9
7	9.71 331	21	9.78 077	29	0.21 923	9.93 253	8	53	5	2.4 2.3
8	9.71 352	21	9.78 106	29	0.21 894	9.93 246	7	52	6	2.9 2.8
9	9.71 373	21	9.78 135	28	0.21 865	9.93 238	8	51	7	3.4 3.3
10	9.71 393	20	9.78 163	28	0.21 837	9.93 230	8	50	8	3.9 3.7
11	9.71 414	21	9.78 192	29	0.21 808	9.93 223	7	49	9	4.4 4.2
12	9.71 435	21	9.78 220	28	0.21 780	9.93 215	8	48	10	4.8 4.7
13	9.71 456	21	9.78 249	29	0.21 751	9.93 207	8	47	20	9.7 9.3
14	9.71 477	21	9.78 277	28	0.21 723	9.93 200	7	46	30	14.5 14.0
15	9.71 498	21	9.78 306	29	0.21 694	9.93 192	8	45	40	19.3 18.7
16	9.71 519	21	9.78 334	28	0.21 666	9.93 184	8	44	50	24.2 23.3
17	9.71 539	20	9.78 363	29	0.21 637	9.93 177	7	43		21 20
18	9.71 560	21	9.78 391	28	0.21 609	9.93 169	8	42	1	0.4 0.3
19	9.71 581	21	9.78 419	28	0.21 581	9.93 161	8	41	2	0.7 0.7
20	9.71 602	21	9.78 448	29	0.21 552	9.93 154	7	40	3	1.0 1.0
21	9.71 622	20	9.78 476	28	0.21 524	9.93 146	8	39	4	1.4 1.3
22	9.71 643	21	9.78 505	29	0.21 495	9.93 138	8	38	5	1.8 1.7
23	9.71 664	21	9.78 533	28	0.21 467	9.93 131	7	37	6	2.1 2.0
24	9.71 685	21	9.78 562	29	0.21 438	9.93 123	8	36	7	2.4 2.3
25	9.71 705	20	9.78 590	28	0.21 410	9.93 115	8	35	8	2.8 2.7
26	9.71 726	21	9.78 618	29	0.21 382	9.93 108	7	34	9	3.2 3.0
27	9.71 747	21	9.78 647	28	0.21 353	9.93 100	8	33	10	3.5 3.3
28	9.71 767	20	9.78 675	29	0.21 325	9.93 092	8	32	20	7.0 6.7
29	9.71 788	21	9.78 704	28	0.21 296	9.93 084	8	31	30	10.5 10.0
30	9.71 809	21	9.78 732	29	0.21 268	9.93 077	7	30	40	14.0 13.3
31	9.71 829	20	9.78 760	28	0.21 240	9.93 069	8	29	50	17.5 16.7
32	9.71 850	21	9.78 789	29	0.21 211	9.93 061	8	28		8 7
33	9.71 870	20	9.78 817	28	0.21 183	9.93 053	8	27	1	0.1 0.1
34	9.71 891	21	9.78 845	29	0.21 155	9.93 046	7	26	2	0.3 0.2
35	9.71 911	20	9.78 874	28	0.21 126	9.93 038	8	25	3	0.4 0.4
36	9.71 932	21	9.78 902	29	0.21 098	9.93 030	8	24	4	0.5 0.5
37	9.71 952	20	9.78 930	28	0.21 070	9.93 022	8	23	5	0.7 0.6
38	9.71 973	21	9.78 959	29	0.21 041	9.93 014	8	22	6	0.8 0.7
39	9.71 994	21	9.78 987	28	0.21 013	9.93 007	7	21	7	0.9 0.8
40	9.72 014	20	9.79 015	29	0.20 985	9.92 999	8	20	8	1.1 0.9
41	9.72 034	21	9.79 043	28	0.20 957	9.92 991	8	19	9	1.2 1.0
42	9.72 055	20	9.79 072	29	0.20 928	9.92 983	8	18	10	1.3 1.2
43	9.72 075	20	9.79 100	28	0.20 900	9.92 976	7	17	20	2.7 2.3
44	9.72 096	21	9.79 128	29	0.20 872	9.92 968	8	16	30	4.0 3.5
45	9.72 116	20	9.79 156	28	0.20 844	9.92 960	8	15	40	5.3 4.7
46	9.72 137	21	9.79 185	29	0.20 815	9.92 952	8	14	50	6.7 5.8
47	9.72 157	20	9.79 213	28	0.20 787	9.92 944	8	13		
48	9.72 177	21	9.79 241	29	0.20 759	9.92 936	8	12		
49	9.72 198	20	9.79 269	28	0.20 731	9.92 929	7	11		
50	9.72 218	21	9.79 297	29	0.20 703	9.92 921	8	10		
51	9.72 238	20	9.79 326	28	0.20 674	9.92 913	8	9		
52	9.72 259	21	9.79 354	29	0.20 646	9.92 905	8	8		
53	9.72 279	20	9.79 382	28	0.20 618	9.92 897	8	7		
54	9.72 299	21	9.79 410	29	0.20 590	9.92 889	8	6		
55	9.72 320	20	9.79 438	28	0.20 562	9.92 881	8	5		
56	9.72 340	21	9.79 466	29	0.20 534	9.92 874	7	4		
57	9.72 360	20	9.79 495	28	0.20 505	9.92 866	8	3		
58	9.72 381	21	9.79 523	29	0.20 477	9.92 858	8	2		
59	9.72 401	20	9.79 551	28	0.20 449	9.92 850	8	1		
60	9.72 421	21	9.79 579	29	0.20 421	9.92 842	8	0		
	L Cos.	d	L Cot	cd	L Tan	L Sin	d		P	P

	L Sin	d	L Tan	cd	L Cot	L Cos	d		P	P
0	9.72 421	20	9.79 579	28	0.20 421	9.92 842	8	60		
1	9.72 441	20	9.79 607	28	0.20 393	9.92 834	8	59	29	28
2	9.72 461	21	9.79 635	28	0.20 365	9.92 826	8	58	1	27
3	9.72 482	20	9.79 663	28	0.20 337	9.92 818	8	57	2	0.4
4	9.72 502	20	9.79 691	28	0.20 309	9.92 810	7	56	3	0.9
5	9.72 522	20	9.79 719	28	0.20 281	9.92 803	8	55	4	1.4
6	9.72 542	20	9.79 747	29	0.20 253	9.92 795	8	54	5	1.9
7	9.72 562	20	9.79 776	28	0.20 224	9.92 787	8	53	6	2.3
8	9.72 582	20	9.79 804	28	0.20 196	9.92 779	8	52	7	2.7
9	9.72 602	20	9.79 832	28	0.20 168	9.92 771	8	51	8	3.2
10	9.72 622	21	9.79 860	28	0.20 140	9.92 763	8	50	9	3.6
11	9.72 643	20	9.79 888	28	0.20 112	9.92 755	8	49	10	4.0
12	9.72 663	20	9.79 916	28	0.20 084	9.92 747	8	48	20	4.5
13	9.72 683	20	9.79 944	28	0.20 056	9.92 739	8	47	30	9.0
14	9.72 703	20	9.79 972	28	0.20 028	9.92 731	8	46	40	13.5
15	9.72 723	20	9.80 000	28	0.20 000	9.92 723	8	45	50	18.0
16	9.72 743	20	9.80 028	28	0.19 972	9.92 715	8	44		22.5
17	9.72 763	20	9.80 056	28	0.19 944	9.92 707	8	43	21	20
18	9.72 783	20	9.80 084	28	0.19 916	9.92 699	8	42	1	19
19	9.72 803	20	9.80 112	28	0.19 888	9.92 691	8	41	2	0.3
20	9.72 823	20	9.80 140	28	0.19 860	9.92 683	8	40	3	0.6
21	9.72 843	20	9.80 168	27	0.19 832	9.92 675	8	39	4	1.0
22	9.72 863	20	9.80 195	28	0.19 805	9.92 667	8	38	5	1.3
23	9.72 883	19	9.80 223	28	0.19 777	9.92 659	8	37	6	1.6
24	9.72 902	20	9.80 251	26	0.19 749	9.92 651	8	36	7	1.9
25	9.72 922	20	9.80 279	28	0.19 721	9.92 643	8	35	8	2.2
26	9.72 942	20	9.80 307	28	0.19 693	9.92 635	8	34	9	2.5
27	9.72 962	20	9.80 335	28	0.19 665	9.92 627	8	33	10	2.8
28	9.72 982	20	9.80 363	28	0.19 637	9.92 619	8	32	20	3.2
29	9.73 002	20	9.80 391	28	0.19 609	9.92 611	8	31	30	6.3
30	9.73 022	19	9.80 419	28	0.19 581	9.92 603	8	30	40	9.5
31	9.73 041	20	9.80 447	27	0.19 553	9.92 595	8	29	50	12.7
32	9.73 061	20	9.80 474	28	0.19 526	9.92 587	8	28		15.8
33	9.73 081	20	9.80 502	28	0.19 498	9.92 579	8	27	9	7
34	9.73 101	20	9.80 530	28	0.19 470	9.92 571	8	26	1	0.1
35	9.73 121	19	9.80 558	28	0.19 442	9.92 563	8	25	2	0.2
36	9.73 140	20	9.80 586	28	0.19 414	9.92 555	9	24	3	0.4
37	9.73 160	20	9.80 614	28	0.19 386	9.92 546	8	23	4	0.5
38	9.73 180	20	9.80 642	27	0.19 358	9.92 538	8	22	5	0.6
39	9.73 200	19	9.80 669	28	0.19 331	9.92 530	8	21	6	0.7
40	9.73 219	20	9.80 697	28	0.19 303	9.92 522	8	20	7	0.8
41	9.73 239	20	9.80 725	28	0.19 275	9.92 514	8	19	8	0.9
42	9.73 259	19	9.80 753	28	0.19 247	9.92 506	8	18	9	1.0
43	9.73 276	20	9.80 781	27	0.19 219	9.92 498	8	17	10	1.2
44	9.73 298	20	9.80 808	28	0.19 192	9.92 490	8	16	20	1.3
45	9.73 318	19	9.80 836	28	0.19 164	9.92 482	8	15	30	1.4
46	9.73 337	20	9.80 864	28	0.19 136	9.92 473	9	14	40	1.5
47	9.73 357	20	9.80 892	27	0.19 108	9.92 465	8	13	50	1.6
48	9.73 377	19	9.80 919	28	0.19 081	9.92 457	8	12		1.7
49	9.73 396	20	9.80 947	28	0.19 053	9.92 449	8	11		1.8
50	9.73 416	19	9.80 975	28	0.19 025	9.92 441	8	10	8	8
51	9.73 435	20	9.81 003	27	0.18 997	9.92 433	8	9	7	7
52	9.73 455	19	9.81 030	28	0.18 970	9.92 425	8	8	29	28
53	9.73 474	20	9.81 058	28	0.18 942	9.92 416	9	8	0	2.0
54	9.73 494	19	9.81 086	27	0.18 914	9.92 408	8	7	1	6.0
55	9.73 513	20	9.81 113	28	0.18 887	9.92 400	8	6	2	10.0
56	9.73 533	19	9.81 141	28	0.18 859	9.92 392	8	5	3	14.0
57	9.73 552	20	9.81 169	27	0.18 831	9.92 384	8	4	4	18.0
58	9.73 572	19	9.81 196	28	0.18 804	9.92 376	8	3	5	22.0
59	9.73 591	20	9.81 224	28	0.18 776	9.92 367	9	2	6	26.0
60	9.73 611		9.81 252		0.18 748	9.92 359	8	1	7	
	L Cos	d	L Cot	cd	L Tan	L Sin	d		P	P

	L Sin	d	L Tan	c d	L Cot	L Cos	d		P P
0	9.73 611	19	9.81 252	27	0.18 748	9.92 359	8	60	
1	9.73 630	20	9.81 279	28	0.18 721	9.92 351	8	59	28 27
2	9.73 650	19	9.81 307	28	0.18 693	9.92 343	8	58	1 0.3 0.4
3	9.73 660	20	9.81 335	27	0.18 665	9.92 335	8	57	2 0.9 0.9
4	9.73 680	19	9.81 362	29	0.18 638	9.92 326	9	56	3 1.4 1.4
5	9.73 708	19	9.81 390	28	0.18 610	9.92 318	8	55	4 1.9 1.8
6	9.73 727	20	9.81 418	27	0.18 582	9.92 310	8	54	5 2.3 2.2
7	9.73 747	19	9.81 445	28	0.18 555	9.92 302	8	53	6 2.8 2.7
8	9.73 766	19	9.81 473	27	0.18 527	9.92 293	9	52	7 3.3 3.2
9	9.73 785	20	9.81 500	28	0.18 500	9.92 285	8	51	8 3.7 3.6
10	9.73 805	19	9.81 528	28	0.18 472	9.92 277	8	50	9 4.2 4.0
11	9.73 824	19	9.81 556	27	0.18 444	9.92 269	8	49	10 4.7 4.5
12	9.73 843	20	9.81 583	28	0.18 417	9.92 260	9	48	20 9.3 9.0
13	9.73 863	19	9.81 611	27	0.18 389	9.92 252	8	47	30 14.0 13.5
14	9.73 882	19	9.81 638	28	0.18 362	9.92 244	8	46	40 18.7 18.0
15	9.73 901	20	9.81 666	27	0.18 334	9.92 235	9	45	50 23.3 22.5
16	9.73 921	19	9.81 693	28	0.18 307	9.92 227	8	44	
17	9.73 940	19	9.81 721	27	0.18 279	9.92 219	8	43	20 20 18
18	9.73 959	19	9.81 748	28	0.18 252	9.92 211	8	42	1 0.3 0.3
19	9.73 978	19	9.81 776	27	0.18 224	9.92 202	9	41	2 0.7 0.6
20	9.73 997	20	9.81 803	28	0.18 197	9.92 194	8	40	3 1.0 1.0
21	9.74 017	19	9.81 831	27	0.18 169	9.92 186	8	39	4 1.3 1.3
22	9.74 036	19	9.81 858	28	0.18 142	9.92 177	9	38	5 1.7 1.6
23	9.74 055	19	9.81 886	27	0.18 114	9.92 169	8	37	6 2.0 1.9
24	9.74 074	19	9.81 913	28	0.18 087	9.92 161	8	36	7 2.3 2.2
25	9.74 093	20	9.81 941	27	0.18 059	9.92 152	9	35	8 2.7 2.5
26	9.74 113	19	9.81 968	28	0.18 032	9.92 144	8	34	9 3.0 2.8
27	9.74 132	19	9.81 996	27	0.18 004	9.92 136	9	33	10 3.3 3.2
28	9.74 151	19	9.82 023	28	0.17 977	9.92 127	8	32	20 6.7 6.3
29	9.74 170	19	9.82 051	27	0.17 949	9.92 119	9	31	30 10.0 9.5
30	9.74 189	19	9.82 078	28	0.17 922	9.92 111	8	30	40 13.3 12.7
31	9.74 208	19	9.82 106	27	0.17 894	9.92 102	9	29	50 16.7 15.8
32	9.74 227	19	9.82 133	28	0.17 867	9.92 094	8	28	
33	9.74 246	19	9.82 161	27	0.17 839	9.92 086	8	27	9 9 8
34	9.74 265	19	9.82 188	28	0.17 812	9.92 077	9	26	1 0.2 0.1
35	9.74 284	19	9.82 215	27	0.17 785	9.92 069	8	25	2 0.3 0.3
36	9.74 303	19	9.82 243	28	0.17 757	9.92 060	9	24	3 0.4 0.4
37	9.74 322	19	9.82 270	27	0.17 730	9.92 052	8	23	4 0.6 0.5
38	9.74 341	19	9.82 298	28	0.17 702	9.92 044	9	22	5 0.8 0.7
39	9.74 360	19	9.82 325	27	0.17 675	9.92 035	8	21	6 0.9 0.8
40	9.74 379	19	9.82 352	28	0.17 648	9.92 027	9	20	7 1.0 0.9
41	9.74 398	19	9.82 380	27	0.17 620	9.92 018	8	19	8 1.2 1.1
42	9.74 417	19	9.82 407	28	0.17 593	9.92 010	9	18	9 1.4 1.2
43	9.74 436	19	9.82 435	27	0.17 565	9.92 002	8	17	10 1.5 1.3
44	9.74 455	19	9.82 462	28	0.17 538	9.91 993	9	16	20 3.0 2.7
45	9.74 474	19	9.82 489	27	0.17 511	9.91 985	8	15	30 4.5 4.0
46	9.74 493	19	9.82 517	28	0.17 483	9.91 976	9	14	40 6.0 5.3
47	9.74 512	19	9.82 544	27	0.17 455	9.91 968	8	13	50 7.5 6.7
48	9.74 531	19	9.82 571	28	0.17 429	9.91 959	9	12	
49	9.74 549	18	9.82 599	27	0.17 401	9.91 951	8	11	
50	9.74 568	19	9.82 626	28	0.17 374	9.91 942	9	10	
51	9.74 587	19	9.82 653	27	0.17 347	9.91 934	8	9	
52	9.74 606	19	9.82 681	28	0.17 319	9.91 925	9	8	
53	9.74 625	19	9.82 708	27	0.17 292	9.91 917	8	7	
54	9.74 644	19	9.82 735	28	0.17 265	9.91 908	9	6	
55	9.74 662	18	9.82 762	27	0.17 238	9.91 900	8	5	
56	9.74 681	19	9.82 790	28	0.17 210	9.91 891	9	4	
57	9.74 700	19	9.82 817	27	0.17 183	9.91 883	8	3	
58	9.74 719	19	9.82 844	28	0.17 156	9.91 874	9	2	
59	9.74 737	18	9.82 871	27	0.17 129	9.91 866	8	1	
60	9.74 756	19	9.82 899	28	0.17 101	9.91 857	9	0	
	L Cos	d	L Cot	c d	L Tan	L Sin	d		P P

	L Sin	d	L Tan	cd	L Cot	L Cos	d		P	P
0	9.74 756		9.82 899		0.17 101	9.91 857	8	60		
1	9.74 775	19	9.82 926	27	0.17 074	9.91 849	9	59	28	27
2	9.74 794	19	9.82 953	27	0.17 047	9.91 840	9	58	0.5	0.4
3	9.74 812	18	9.82 980	27	0.17 020	9.91 832	8	57	0.9	0.9
4	9.74 831	19	9.83 008	28	0.16 992	9.91 823	9	56	1.4	1.4
5	9.74 850	19	9.83 035	27	0.16 965	9.91 815	8	55	1.9	1.8
6	9.74 868	18	9.83 062	27	0.16 938	9.91 806	8	54	2.3	2.2
7	9.74 887	19	9.83 089	27	0.16 911	9.91 798	9	53	2.8	2.7
8	9.74 906	19	9.83 117	28	0.16 883	9.91 789	8	52	3.3	3.2
9	9.74 924	18	9.83 144	27	0.16 856	9.91 781	9	51	3.7	3.6
10	9.74 943	19	9.83 171	27	0.16 829	9.91 772	8	50	4.2	4.0
11	9.74 961	18	9.83 198	27	0.16 802	9.91 763	9	49	4.7	4.5
12	9.74 980	19	9.83 225	27	0.16 775	9.91 755	8	48	9.3	9.0
13	9.74 999	19	9.83 252	27	0.16 748	9.91 746	9	47	14.0	13.5
14	9.75 017	18	9.83 280	27	0.16 720	9.91 738	8	46	18.7	18.0
15	9.75 036	19	9.83 307	28	0.16 693	9.91 729	9	45	23.3	22.5
16	9.75 054	18	9.83 334	27	0.16 666	9.91 720	8	44		
17	9.75 073	19	9.83 361	27	0.16 639	9.91 712	9	43	19	18
18	9.75 091	18	9.83 388	27	0.16 612	9.91 703	8	42	1	0.3
19	9.75 110	19	9.83 415	27	0.16 585	9.91 695	9	41	2	0.6
20	9.75 128	18	9.83 442	27	0.16 558	9.91 686	8	40	3	1.0
21	9.75 147	19	9.83 470	27	0.16 530	9.91 677	9	39	4	1.3
22	9.75 165	18	9.83 497	27	0.16 503	9.91 669	8	38	5	1.6
23	9.75 184	19	9.83 524	27	0.16 476	9.91 660	9	37	6	1.9
24	9.75 202	18	9.83 551	27	0.16 449	9.91 651	8	36	7	2.2
25	9.75 221	19	9.83 578	27	0.16 422	9.91 643	9	35	8	2.5
26	9.75 239	18	9.83 605	27	0.16 395	9.91 634	8	34	9	2.8
27	9.75 258	19	9.83 632	27	0.16 368	9.91 625	9	33	10	3.2
28	9.75 276	18	9.83 659	27	0.16 341	9.91 617	8	32	20	6.3
29	9.75 294	19	9.83 686	27	0.16 314	9.91 608	9	31	30	9.5
30	9.75 313	18	9.83 713	27	0.16 287	9.91 599	8	30	40	12.7
31	9.75 331	19	9.83 740	27	0.16 260	9.91 591	9	29	50	15.8
32	9.75 350	18	9.83 768	27	0.16 232	9.91 582	8	28		
33	9.75 368	19	9.83 795	27	0.16 205	9.91 573	9	27	9	8
34	9.75 386	18	9.83 822	27	0.16 178	9.91 565	8	26	1	0.2
35	9.75 405	19	9.83 849	27	0.16 151	9.91 556	9	25	2	0.3
36	9.75 423	18	9.83 876	27	0.16 124	9.91 547	8	24	3	0.4
37	9.75 441	19	9.83 903	27	0.16 097	9.91 538	9	23	4	0.6
38	9.75 459	18	9.83 930	27	0.16 070	9.91 530	8	22	5	0.8
39	9.75 478	19	9.83 957	27	0.16 043	9.91 521	9	21	6	0.9
40	9.75 496	18	9.83 984	27	0.16 016	9.91 512	8	20	7	1.0
41	9.75 514	19	9.84 011	27	0.15 989	9.91 504	9	19	8	1.2
42	9.75 533	18	9.84 038	27	0.15 962	9.91 495	8	18	9	1.4
43	9.75 551	19	9.84 065	27	0.15 935	9.91 486	9	17	10	1.5
44	9.75 569	18	9.84 092	27	0.15 908	9.91 477	8	16	20	3.0
45	9.75 587	19	9.84 119	27	0.15 881	9.91 469	9	15	30	4.5
46	9.75 605	18	9.84 146	27	0.15 854	9.91 460	8	14	40	6.0
47	9.75 624	19	9.84 173	27	0.15 827	9.91 451	9	13	50	7.5
48	9.75 642	18	9.84 200	27	0.15 800	9.91 442	8	12		
49	9.75 660	19	9.84 227	27	0.15 773	9.91 433	9	11	9	8
50	9.75 678	18	9.84 254	27	0.15 746	9.91 425	8	10	28	28
51	9.75 696	19	9.84 280	26	0.15 720	9.91 416	9	9	27	27
52	9.75 714	18	9.84 307	27	0.15 693	9.91 407	8	8	1.6	1.8
53	9.75 733	19	9.84 334	27	0.15 666	9.91 398	9	7	4.7	5.2
54	9.75 751	18	9.84 361	27	0.15 639	9.91 389	8	6	7.8	8.8
55	9.75 769	19	9.84 388	27	0.15 612	9.91 381	9	5	10.9	12.2
56	9.75 787	18	9.84 415	27	0.15 585	9.91 372	8	4	14.0	15.8
57	9.75 805	19	9.84 442	27	0.15 558	9.91 363	9	3	17.1	19.2
58	9.75 823	18	9.84 469	27	0.15 531	9.91 354	8	2	20.2	22.8
59	9.75 841	19	9.84 496	27	0.15 504	9.91 345	9	1	23.3	26.2
60	9.75 859	18	9.84 523	27	0.15 477	9.91 336	8	0	26.4	—
	L Cos	d	L Cot	cd	L Tan	L Sin	d		P	P

	L Sin	d	L Tan	ed	L Cot	L Cos	d		P	P
0	0.75 849	18	0.84 523	27	0.15 477	0.91 336	8	60		
1	0.75 877	18	0.84 550	26	0.15 450	0.91 328	9	59	27	26
2	0.75 895	18	0.84 576	27	0.15 424	0.91 319	9	58	1	18
3	0.75 913	18	0.84 603	27	0.15 397	0.91 310	9	57	2	0.3
4	0.75 931	18	0.84 630	27	0.15 370	0.91 301	9	56	3	0.6
5	0.75 949	18	0.84 657	27	0.15 343	0.91 292	9	55	4	0.9
6	0.75 967	18	0.84 684	27	0.15 316	0.91 283	9	54	5	1.2
7	0.75 985	18	0.84 711	27	0.15 289	0.91 274	9	53	6	1.5
8	0.76 003	18	0.84 738	26	0.15 262	0.91 266	8	52	7	1.8
9	0.76 021	18	0.84 764	27	0.15 236	0.91 257	9	51	8	2.1
10	0.76 039	18	0.84 791	27	0.15 209	0.91 248	9	50	9	2.4
11	0.76 057	18	0.84 818	27	0.15 182	0.91 239	9	49	10	2.7
12	0.76 075	18	0.84 845	27	0.15 155	0.91 230	9	48	20	3.0
13	0.76 093	18	0.84 872	27	0.15 128	0.91 221	9	47	30	6.0
14	0.76 111	18	0.84 899	26	0.15 101	0.91 212	9	46	40	9.0
15	0.76 129	17	0.84 925	27	0.15 075	0.91 203	9	45	50	12.0
16	0.76 146	18	0.84 952	27	0.15 048	0.91 194	9	44		15.0
17	0.76 164	18	0.84 979	27	0.15 021	0.91 185	9	43	17	10
18	0.76 182	18	0.85 006	27	0.14 994	0.91 176	9	42	1	9
19	0.76 200	18	0.85 033	26	0.14 967	0.91 167	9	41	2	8
20	0.76 218	18	0.85 059	27	0.14 941	0.91 158	9	40	3	
21	0.76 236	17	0.85 086	27	0.14 914	0.91 149	9	39	4	
22	0.76 253	18	0.85 113	27	0.14 887	0.91 141	8	38	5	
23	0.76 271	18	0.85 140	26	0.14 860	0.91 132	9	37	6	
24	0.76 289	18	0.85 166	27	0.14 834	0.91 123	9	36	7	
25	0.76 307	17	0.85 193	27	0.14 807	0.91 114	9	35	8	
26	0.76 324	18	0.85 220	27	0.14 780	0.91 105	9	34	9	
27	0.76 342	18	0.85 247	26	0.14 753	0.91 096	9	33	10	
28	0.76 360	18	0.85 273	27	0.14 727	0.91 087	9	32	20	
29	0.76 378	17	0.85 300	27	0.14 700	0.91 078	9	31	30	
30	0.76 395	18	0.85 327	27	0.14 673	0.91 069	9	30	40	
31	0.76 413	18	0.85 354	26	0.14 646	0.91 060	9	29	50	
32	0.76 431	17	0.85 380	27	0.14 620	0.91 051	9	28		
33	0.76 448	18	0.85 407	27	0.14 593	0.91 042	9	27		
34	0.76 466	18	0.85 434	26	0.14 566	0.91 033	10	26		
35	0.76 484	17	0.85 460	27	0.14 540	0.91 023	9	25		
36	0.76 501	18	0.85 487	27	0.14 513	0.91 014	9	24		
37	0.76 519	18	0.85 514	26	0.14 486	0.91 005	9	23		
38	0.76 537	17	0.85 540	27	0.14 460	0.90 996	9	22		
39	0.76 554	18	0.85 567	27	0.14 433	0.90 987	9	21		
40	0.76 572	18	0.85 594	26	0.14 406	0.90 978	9	20		
41	0.76 590	17	0.85 620	27	0.14 380	0.90 969	9	19		
42	0.76 607	18	0.85 647	27	0.14 353	0.90 960	9	18		
43	0.76 625	17	0.85 674	26	0.14 326	0.90 951	9	17		
44	0.76 642	18	0.85 700	27	0.14 300	0.90 942	9	16		
45	0.76 660	17	0.85 727	27	0.14 273	0.90 933	9	15		
46	0.76 677	18	0.85 754	26	0.14 246	0.90 924	9	14		
47	0.76 695	17	0.85 780	27	0.14 220	0.90 915	9	13		
48	0.76 712	18	0.85 807	27	0.14 193	0.90 906	10	12		
49	0.76 730	17	0.85 834	26	0.14 166	0.90 896	9	11		
50	0.76 747	18	0.85 860	27	0.14 140	0.90 887	9	10		
51	0.76 765	17	0.85 887	26	0.14 113	0.90 878	9	9		
52	0.76 782	18	0.85 913	27	0.14 087	0.90 869	9	8		
53	0.76 800	17	0.85 940	27	0.14 060	0.90 860	9	7		
54	0.76 817	18	0.85 967	26	0.14 033	0.90 851	9	6		
55	0.76 835	17	0.85 993	27	0.14 007	0.90 842	10	5		
56	0.76 852	18	0.86 020	26	0.13 980	0.90 832	9	4		
57	0.76 870	17	0.86 046	27	0.13 954	0.90 823	9	3		
58	0.76 887	18	0.86 073	27	0.13 927	0.90 814	9	2		
59	0.76 904	17	0.86 100	26	0.13 900	0.90 805	9	1		
60	0.76 922	18	0.86 126	26	0.13 874	0.90 796	9	0		
	L Cos	d	L Cot	ed	L Tan	L Sin	d		P	P

	L Sin	d	L Tan	c d	L Cot	L Cos	d		P	P
0	9.76 922		9.86 126	27	0.13 874	9.90 796	9	60		
1	9.76 939	17	9.86 153	26	0.13 847	9.90 787	10	59	1	0.4
2	9.76 957	18	9.86 179	27	0.13 821	9.90 777	9	58	2	0.9
3	9.76 974	17	9.86 206	26	0.13 794	9.90 768	9	57	3	1.4
4	9.76 991	17	9.86 232	27	0.13 768	9.90 759	9	56	4	1.8
5	9.77 009	18	9.86 259	26	0.13 741	9.90 750	9	55	5	2.2
6	9.77 026	17	9.86 285	27	0.13 715	9.90 741	10	54	6	2.7
7	9.77 043	17	9.86 312	26	0.13 688	9.90 731	9	53	7	3.2
8	9.77 061	18	9.86 338	27	0.13 662	9.90 722	9	52	8	3.6
9	9.77 078	17	9.86 365	26	0.13 635	9.90 713	9	51	9	4.0
10	9.77 095	17	9.86 392	27	0.13 608	9.90 704	10	50	10	4.5
11	9.77 112	18	9.86 418	26	0.13 582	9.90 694	9	49	20	9.0
12	9.77 130	17	9.86 445	27	0.13 555	9.90 685	9	48	30	13.5
13	9.77 147	17	9.86 471	26	0.13 529	9.90 676	9	47	40	18.0
14	9.77 164	17	9.86 498	27	0.13 502	9.90 667	9	46	50	22.5
15	9.77 181	18	9.86 524	26	0.13 476	9.90 657	10	45		
16	9.77 199	17	9.86 551	27	0.13 449	9.90 648	9	44	18	17
17	9.77 216	17	9.86 577	26	0.13 423	9.90 639	9	43	1	16
18	9.77 233	17	9.86 603	27	0.13 397	9.90 630	9	42	2	0.3
19	9.77 250	18	9.86 630	26	0.13 370	9.90 620	10	41	3	0.6
20	9.77 268	17	9.86 656	27	0.13 344	9.90 611	9	40	4	0.9
21	9.77 285	17	9.86 683	26	0.13 317	9.90 602	9	39	5	0.8
22	9.77 302	17	9.86 709	27	0.13 291	9.90 592	10	38	6	1.1
23	9.77 319	17	9.86 736	26	0.13 264	9.90 583	9	37	7	1.3
24	9.77 336	17	9.86 762	27	0.13 238	9.90 574	9	36	8	1.6
25	9.77 353	17	9.86 789	26	0.13 211	9.90 565	9	35	9	1.9
26	9.77 370	17	9.86 815	27	0.13 185	9.90 555	10	34	10	2.1
27	9.77 387	18	9.86 842	26	0.13 158	9.90 546	9	33	20	2.4
28	9.77 405	17	9.86 868	27	0.13 132	9.90 537	9	32	30	2.7
29	9.77 422	17	9.86 894	26	0.13 106	9.90 527	10	31	40	5.3
30	9.77 439	17	9.86 921	27	0.13 079	9.90 518	9	30	50	8.0
31	9.77 456	17	9.86 947	26	0.13 053	9.90 509	9	29		10.7
32	9.77 473	17	9.86 974	27	0.13 026	9.90 499	10	28		13.3
33	9.77 490	17	9.87 000	26	0.13 000	9.90 490	9	27	10	9
34	9.77 507	17	9.87 027	27	0.12 973	9.90 480	10	26	1	0.2
35	9.77 524	17	9.87 053	26	0.12 947	9.90 471	9	25	2	0.3
36	9.77 541	17	9.87 079	27	0.12 921	9.90 462	9	24	3	0.4
37	9.77 558	17	9.87 106	26	0.12 894	9.90 452	10	23	4	0.6
38	9.77 575	17	9.87 132	27	0.12 868	9.90 443	9	22	5	0.8
39	9.77 592	17	9.87 158	26	0.12 842	9.90 434	9	21	6	0.8
40	9.77 609	17	9.87 185	27	0.12 815	9.90 424	10	20	7	0.9
41	9.77 626	17	9.87 211	26	0.12 789	9.90 415	9	19	8	1.0
42	9.77 643	17	9.87 238	27	0.12 762	9.90 405	10	18	9	1.0
43	9.77 660	17	9.87 264	26	0.12 736	9.90 396	9	17	10	1.2
44	9.77 677	17	9.87 290	27	0.12 710	9.90 386	10	16	20	1.2
45	9.77 694	17	9.87 317	26	0.12 683	9.90 377	9	15	30	1.4
46	9.77 711	17	9.87 343	27	0.12 657	9.90 368	9	14	40	1.5
47	9.77 728	17	9.87 369	26	0.12 631	9.90 358	10	13	50	1.7
48	9.77 744	16	9.87 396	27	0.12 604	9.90 349	9	12	10	1.5
49	9.77 761	17	9.87 422	26	0.12 578	9.90 339	10	11	20	3.3
50	9.77 778	17	9.87 448	27	0.12 552	9.90 330	9	10	30	5.0
51	9.77 795	17	9.87 475	26	0.12 525	9.90 320	10	9	40	6.7
52	9.77 812	17	9.87 501	27	0.12 499	9.90 311	9	8	50	8.3
53	9.77 829	17	9.87 527	26	0.12 473	9.90 301	10	7		7.5
54	9.77 846	17	9.87 554	27	0.12 446	9.90 292	9	6		10.1
55	9.77 862	16	9.87 580	26	0.12 420	9.90 282	9	5		13.0
56	9.77 879	17	9.87 606	27	0.12 394	9.90 273	10	4		15.9
57	9.77 896	17	9.87 633	26	0.12 367	9.90 263	9	3		18.8
58	9.77 913	17	9.87 659	27	0.12 341	9.90 254	10	2		21.7
59	9.77 930	17	9.87 685	26	0.12 315	9.90 244	9	1		24.6
60	9.77 946	16	9.87 711	27	0.12 289	9.90 235	10	0		
	L Cos	d	L Cot	c d	L Tan	L Sin	d		P	P

L Sin	d	L Tan	cd	L Cot	L Cos	d	P P		
0	9.77 946	17	9.87 711	27	0.12 289	9.90 235	10	60	
1	9.77 963	17	9.87 738	26	0.12 262	9.90 225	10	59	
2	9.77 980	17	9.87 764	26	0.12 236	9.90 216	9	58	27 26
3	9.77 997	16	9.87 790	27	0.12 210	9.90 206	10	57	1 0.4 0.4
4	9.78 013	17	9.87 817	26	0.12 183	9.90 197	9	56	2 0.9 0.9
5	9.78 030	17	9.87 843	26	0.12 157	9.90 187	10	55	3 1.4 1.3
6	9.78 047	16	9.87 869	26	0.12 131	9.90 178	9	54	4 1.8 1.7
7	9.78 063	17	9.87 895	27	0.12 105	9.90 168	10	53	5 2.2 2.2
8	9.78 080	17	9.87 922	26	0.12 078	9.90 159	9	52	6 2.7 2.6
9	9.78 097	16	9.87 948	26	0.12 052	9.90 149	10	51	7 3.2 3.0
10	9.78 113	17	9.87 974	26	0.12 026	9.90 139	10	50	8 3.6 3.5
11	9.78 130	17	9.88 000	27	0.12 000	9.90 130	9	49	9 4.0 3.9
12	9.78 147	16	9.88 027	26	0.11 973	9.90 120	10	48	10 4.5 4.3
13	9.78 163	17	9.88 053	26	0.11 947	9.90 111	9	47	20 9.0 8.7
14	9.78 180	17	9.88 079	26	0.11 921	9.90 101	10	46	30 13.5 13.0
15	9.78 197	16	9.88 105	26	0.11 895	9.90 091	9	45	40 18.0 17.3
16	9.78 213	17	9.88 131	27	0.11 869	9.90 082	10	44	50 22.5 21.7
17	9.78 230	16	9.88 158	26	0.11 842	9.90 072	9	43	17 16
18	9.78 246	17	9.88 184	26	0.11 816	9.90 063	10	42	1 0.3 0.3
19	9.78 263	17	9.88 210	26	0.11 790	9.90 053	10	41	2 0.6 0.5
20	9.78 280	16	9.88 236	26	0.11 764	9.90 043	9	40	3 0.8 0.8
21	9.78 296	17	9.88 262	27	0.11 738	9.90 034	10	39	4 1.1 1.1
22	9.78 313	16	9.88 289	26	0.11 711	9.90 024	9	38	5 1.4 1.3
23	9.78 329	17	9.88 315	26	0.11 685	9.90 014	10	37	6 1.7 1.6
24	9.78 346	16	9.88 341	26	0.11 659	9.90 005	9	36	7 2.0 1.9
25	9.78 362	17	9.88 367	26	0.11 633	9.89 995	10	35	8 2.3 2.1
26	9.78 379	16	9.88 393	27	0.11 607	9.89 985	9	34	9 2.6 2.4
27	9.78 395	17	9.88 420	26	0.11 580	9.89 976	10	33	10 2.8 2.7
28	9.78 412	16	9.88 446	26	0.11 554	9.89 966	9	32	20 5.7 5.3
29	9.78 428	17	9.88 472	26	0.11 528	9.89 956	10	31	30 8.5 8.0
30	9.78 445	16	9.88 498	26	0.11 502	9.89 947	9	30	40 11.3 10.7
31	9.78 461	17	9.88 524	26	0.11 476	9.89 937	10	29	50 14.2 13.3
32	9.78 478	16	9.88 550	27	0.11 450	9.89 927	9	28	10 9
33	9.78 494	16	9.88 577	26	0.11 423	9.89 918	10	27	1 0.2 0.2
34	9.78 510	17	9.88 603	26	0.11 397	9.89 908	9	26	2 0.3 0.3
35	9.78 527	16	9.88 629	26	0.11 371	9.89 898	10	25	3 0.5 0.4
36	9.78 543	17	9.88 655	26	0.11 345	9.89 888	9	24	4 0.7 0.6
37	9.78 560	16	9.88 681	26	0.11 319	9.89 879	10	23	5 0.8 0.8
38	9.78 576	16	9.88 707	26	0.11 293	9.89 869	9	22	6 1.0 0.9
39	9.78 592	17	9.88 733	26	0.11 267	9.89 859	10	21	7 1.2 1.0
40	9.78 609	16	9.88 759	27	0.11 241	9.89 849	9	20	8 1.3 1.2
41	9.78 625	17	9.88 786	26	0.11 214	9.89 840	10	19	9 1.5 1.4
42	9.78 642	16	9.88 812	26	0.11 188	9.89 830	9	18	10 1.7 1.5
43	9.78 658	16	9.88 838	26	0.11 162	9.89 820	10	17	20 3.3 3.0
44	9.78 674	17	9.88 864	26	0.11 136	9.89 810	9	16	30 5.0 4.5
45	9.78 691	16	9.88 890	26	0.11 110	9.89 801	10	15	40 6.7 6.0
46	9.78 707	16	9.88 916	26	0.11 084	9.89 791	9	14	50 8.3 7.5
47	9.78 723	16	9.88 942	26	0.11 058	9.89 781	10	13	10 10
48	9.78 739	17	9.88 968	26	0.11 032	9.89 771	9	12	27 26
49	9.78 756	16	9.88 994	26	0.11 006	9.89 761	10	11	
50	9.78 772	16	9.89 020	26	0.10 980	9.89 752	9	10	0 1.4 1.3
51	9.78 788	17	9.89 046	27	0.10 954	9.89 742	10	9	1 4.1 3.9
52	9.78 805	16	9.89 073	26	0.10 927	9.89 732	9	8	2 6.8 6.5
53	9.78 821	16	9.89 099	26	0.10 901	9.89 722	10	7	3 9.4 9.1
54	9.78 837	16	9.89 125	26	0.10 875	9.89 712	9	6	4 12.2 11.7
55	9.78 853	16	9.89 151	26	0.10 849	9.89 702	10	5	5 14.8 14.3
56	9.78 869	17	9.89 177	26	0.10 823	9.89 693	9	4	6 17.6 16.9
57	9.78 886	16	9.89 203	26	0.10 797	9.89 683	10	3	7 20.2 19.5
58	9.78 902	16	9.89 229	26	0.10 771	9.89 673	9	2	8 22.9 22.1
59	9.78 918	16	9.89 255	26	0.10 745	9.89 663	10	1	9 25.6 24.7
60	9.78 934	16	9.89 281	26	0.10 719	9.89 653	10	0	
L Cos	d	L Cot	cd	L Tan	L Sin	d	P P		

	L Sin	d	L Tan	c d	L Cot	L Cos	d		P	P
0	9.78 934	16	9.89 281	26	0.10 719	9.89 653	10	60		
1	9.78 950	17	9.89 307	26	0.10 693	9.89 643	10	59	1	26
2	9.78 967	16	9.89 333	26	0.10 667	9.89 633	10	58	2	25
3	9.78 983	16	9.89 359	26	0.10 641	9.89 624	9	57	3	0.4
4	9.78 999	16	9.89 385	26	0.10 615	9.89 614	10	56	4	0.8
5	9.79 015	16	9.89 411	26	0.10 589	9.89 604	10	55	5	1.3
6	9.79 031	16	9.89 437	26	0.10 563	9.89 594	10	54	6	1.7
7	9.79 047	16	9.89 463	26	0.10 537	9.89 584	10	53	7	2.2
8	9.79 063	16	9.89 489	26	0.10 511	9.89 574	10	52	8	2.6
9	9.79 079	16	9.89 515	26	0.10 485	9.89 564	10	51	9	3.0
10	9.79 095	16	9.89 541	26	0.10 459	9.89 554	10	50	10	3.5
11	9.79 111	17	9.89 567	26	0.10 433	9.89 544	10	49	20	3.9
12	9.79 128	16	9.89 593	26	0.10 407	9.89 534	10	48	30	4.3
13	9.79 144	16	9.89 619	26	0.10 381	9.89 524	10	47	40	8.7
14	9.79 160	16	9.89 645	26	0.10 355	9.89 514	10	46	50	13.0
15	9.79 176	16	9.89 671	26	0.10 329	9.89 504	10	45		17.3
16	9.79 192	16	9.89 697	26	0.10 303	9.89 495	9	44		21.7
17	9.79 208	16	9.89 723	26	0.10 277	9.89 485	10	43	17	16
18	9.79 224	16	9.89 749	26	0.10 251	9.89 475	10	42	1	15
19	9.79 240	16	9.89 775	26	0.10 225	9.89 465	10	41	2	0.2
20	9.79 256	16	9.89 801	26	0.10 199	9.89 455	10	40	3	0.5
21	9.79 272	16	9.89 827	26	0.10 173	9.89 445	10	39	4	0.8
22	9.79 288	16	9.89 853	26	0.10 147	9.89 435	10	38	5	1.0
23	9.79 304	15	9.89 879	26	0.10 121	9.89 425	10	37	6	1.2
24	9.79 319	16	9.89 905	26	0.10 095	9.89 415	10	36	7	1.5
25	9.79 335	16	9.89 931	26	0.10 069	9.89 405	10	35	8	1.8
26	9.79 351	16	9.89 957	26	0.10 043	9.89 395	10	34	9	2.0
27	9.79 367	16	9.89 983	26	0.10 017	9.89 385	10	33	10	2.2
28	9.79 383	16	9.90 009	26	0.09 991	9.89 375	10	32	20	2.5
29	9.79 399	16	9.90 035	26	0.09 965	9.89 364	11	31	30	5.0
30	9.79 415	16	9.90 061	25	0.09 939	9.89 354	10	30	40	7.5
31	9.79 431	16	9.90 086	26	0.09 914	9.89 344	10	29	50	10.0
32	9.79 447	16	9.90 112	26	0.09 888	9.89 334	10	28		12.5
33	9.79 463	15	9.90 138	26	0.09 862	9.89 324	10	27	11	10
34	9.79 478	16	9.90 164	26	0.09 836	9.89 314	10	26	1	9
35	9.79 494	16	9.90 190	26	0.09 810	9.89 304	10	25	2	0.2
36	9.79 510	16	9.90 216	26	0.09 784	9.89 294	10	24	3	0.3
37	9.79 526	16	9.90 242	26	0.09 758	9.89 284	10	23	4	0.4
38	9.79 542	16	9.90 268	26	0.09 732	9.89 274	10	22	5	0.5
39	9.79 558	15	9.90 294	26	0.09 706	9.89 264	10	21	6	0.6
40	9.79 573	16	9.90 320	26	0.09 680	9.89 254	10	20	7	0.7
41	9.79 589	16	9.90 346	26	0.09 654	9.89 244	10	19	8	0.8
42	9.79 605	16	9.90 371	25	0.09 629	9.89 234	11	18	9	0.9
43	9.79 621	15	9.90 397	26	0.09 603	9.89 223	10	17	10	1.0
44	9.79 636	16	9.90 423	26	0.09 577	9.89 213	10	16	11	1.2
45	9.79 652	16	9.90 449	26	0.09 551	9.89 203	10	15	12	1.4
46	9.79 668	16	9.90 475	26	0.09 525	9.89 193	10	14	13	1.5
47	9.79 684	15	9.90 501	26	0.09 499	9.89 183	10	13	14	1.7
48	9.79 699	16	9.90 527	26	0.09 473	9.89 173	10	12	15	1.8
49	9.79 715	16	9.90 553	26	0.09 447	9.89 162	11	11	16	1.9
50	9.79 731	15	9.90 578	25	0.09 422	9.89 152	10	10	17	2.0
51	9.79 746	16	9.90 604	26	0.09 396	9.89 142	10	9	18	2.2
52	9.79 762	16	9.90 630	26	0.09 370	9.89 132	10	8	19	2.4
53	9.79 778	15	9.90 656	26	0.09 344	9.89 122	10	7	20	2.6
54	9.79 793	16	9.90 682	26	0.09 318	9.89 112	10	6	21	2.8
55	9.79 809	16	9.90 708	26	0.09 292	9.89 101	11	5	22	3.0
56	9.79 825	15	9.90 734	26	0.09 266	9.89 091	10	4	23	3.2
57	9.79 840	16	9.90 759	25	0.09 241	9.89 081	10	3	24	3.4
58	9.79 856	16	9.90 785	26	0.09 215	9.89 071	10	2	25	3.6
59	9.79 872	15	9.90 811	26	0.09 189	9.89 060	11	1	26	3.8
60	9.79 887	15	9.90 837	26	0.09 163	9.89 050	10	0		
	L Cos	d	L Cot	c d	L Tan	L Sin	d		P	P

	L Sin	d	L Tan	ed	L Cot	L Cos	d		P	P
0	9.79 887	16	9.90 837	26	0.09 163	9.89 050	10	60		
1	9.79 903	15	9.90 863	26	0.09 137	9.89 040	10	59	26	25
2	9.79 918	16	9.90 889	25	0.09 111	9.89 030	10	58	1	0.4 0.4
3	9.79 934	16	9.90 914	26	0.09 086	9.89 020	10	57	2	0.9 0.8
4	9.79 950	15	9.90 940	26	0.09 060	9.89 009	11	56	3	1.3 1.2
5	9.79 965	16	9.90 966	26	0.09 034	9.88 999	10	55	4	1.7 1.7
6	9.79 981	15	9.90 992	26	0.09 008	9.88 989	10	54	5	2.2 2.1
7	9.79 996	16	9.91 018	25	0.08 982	9.88 978	11	53	6	2.6 2.5
8	9.80 012	15	9.91 043	26	0.08 957	9.88 968	10	52	7	3.0 2.9
9	9.80 027	16	9.91 069	26	0.08 931	9.88 958	10	51	8	3.5 3.3
10	9.80 043	15	9.91 095	26	0.08 905	9.88 948	10	50	9	3.9 3.8
11	9.80 058	16	9.91 121	26	0.08 879	9.88 937	11	49	10	4.3 4.2
12	9.80 074	15	9.91 147	25	0.08 853	9.88 927	10	48	20	8.7 8.3
13	9.80 089	16	9.91 172	26	0.08 828	9.88 917	10	47	30	13.0 12.5
14	9.80 105	15	9.91 198	26	0.08 802	9.88 906	11	46	40	17.3 16.7
15	9.80 120	16	9.91 224	26	0.08 776	9.88 896	10	45	50	21.7 20.8
16	9.80 136	15	9.91 250	26	0.08 750	9.88 886	10	44		16 15
17	9.80 151	15	9.91 276	25	0.08 724	9.88 875	11	43	1	0.3 0.2
18	9.80 166	16	9.91 301	26	0.08 699	9.88 865	10	42	2	0.5 0.5
19	9.80 182	15	9.91 327	26	0.08 673	9.88 855	10	41	3	0.8 0.8
20	9.80 197	16	9.91 353	26	0.08 647	9.88 844	11	40	4	1.1 1.0
21	9.80 213	15	9.91 379	25	0.08 621	9.88 834	10	39	5	1.3 1.2
22	9.80 228	16	9.91 404	26	0.08 596	9.88 824	10	38	6	1.6 1.5
23	9.80 244	15	9.91 430	26	0.08 570	9.88 813	11	37	7	1.9 1.8
24	9.80 259	15	9.91 456	26	0.08 544	9.88 803	10	36	8	2.1 2.0
25	9.80 274	16	9.91 482	25	0.08 518	9.88 793	10	35	9	2.4 2.2
26	9.80 290	15	9.91 507	26	0.08 493	9.88 782	11	34	10	2.7 2.5
27	9.80 305	15	9.91 533	26	0.08 467	9.88 772	10	33	20	5.3 5.0
28	9.80 320	16	9.91 559	26	0.08 441	9.88 761	11	32	30	8.0 7.5
29	9.80 336	15	9.91 585	25	0.08 415	9.88 751	10	31	40	10.7 10.0
30	9.80 351	15	9.91 610	26	0.08 390	9.88 741	10	30	50	13.3 12.5
31	9.80 366	16	9.91 636	26	0.08 364	9.88 730	11	29		11 10
32	9.80 382	15	9.91 662	26	0.08 338	9.88 720	10	28	1	0.2 0.2
33	9.80 397	15	9.91 688	25	0.08 312	9.88 709	11	27	2	0.4 0.3
34	9.80 412	16	9.91 713	26	0.08 287	9.88 699	10	26	3	0.6 0.5
35	9.80 428	15	9.91 739	26	0.08 261	9.88 688	11	25	4	0.7 0.7
36	9.80 443	15	9.91 765	26	0.08 235	9.88 678	10	24	5	0.9 0.8
37	9.80 458	15	9.91 791	25	0.08 209	9.88 668	10	23	6	1.1 1.0
38	9.80 473	16	9.91 816	26	0.08 184	9.88 657	11	22	7	1.3 1.2
39	9.80 489	15	9.91 842	26	0.08 158	9.88 647	10	21	8	1.5 1.3
40	9.80 504	15	9.91 868	25	0.08 132	9.88 636	11	20	9	1.6 1.5
41	9.80 519	15	9.91 893	26	0.08 107	9.88 626	10	19	10	1.8 1.7
42	9.80 534	16	9.91 919	26	0.08 081	9.88 615	11	18	20	3.7 3.3
43	9.80 550	15	9.91 945	26	0.08 055	9.88 605	10	17	30	5.5 5.0
44	9.80 565	15	9.91 971	25	0.08 029	9.88 594	11	16	40	7.3 6.7
45	9.80 580	15	9.91 996	26	0.08 004	9.88 584	10	15	50	9.2 8.3
46	9.80 595	15	9.92 022	26	0.07 978	9.88 573	11	14		
47	9.80 610	15	9.92 048	25	0.07 952	9.88 563	10	13		11 11
48	9.80 625	16	9.92 073	26	0.07 927	9.88 552	11	12		26 25
49	9.80 641	15	9.92 099	26	0.07 901	9.88 542	10	11		
50	9.80 656	15	9.92 125	25	0.07 875	9.88 531	11	10	0	1.2 1.1
51	9.80 671	15	9.92 150	26	0.07 850	9.88 521	10	9	1	3.5 3.4
52	9.80 686	15	9.92 176	26	0.07 824	9.88 510	11	8	2	5.9 5.7
53	9.80 701	15	9.92 202	25	0.07 798	9.88 499	10	7	3	8.3 7.9
54	9.80 716	15	9.92 227	26	0.07 773	9.88 489	11	6	4	10.6 10.2
55	9.80 731	15	9.92 253	26	0.07 747	9.88 478	10	5	5	13.0 12.5
56	9.80 746	16	9.92 279	25	0.07 721	9.88 468	11	4	6	15.4 14.8
57	9.80 762	15	9.92 304	26	0.07 696	9.88 457	10	3	7	17.7 17.1
58	9.80 777	15	9.92 330	26	0.07 670	9.88 447	11	2	8	20.1 19.3
59	9.80 792	15	9.92 356	25	0.07 644	9.88 436	10	1	9	22.5 21.6
60	9.80 807	15	9.92 381	25	0.07 619	9.88 425	11	0	10	24.8 23.9
	L Cos	d	L Cot	ed	L Tan	L Sin	d		P	P

	L Sin	d	L Tan	c d	L Cot	L Cos	d		P	P
0	9.80 807		9.92 381		0.07 619	9.88 425	10	60		26 25
1	9.80 822	15	9.92 407	26	0.07 593	9.88 415	11	59	1	0.4 0.4
2	9.80 837	15	9.92 433	26	0.07 567	9.88 404	10	58	2	0.9 0.8
3	9.80 852	15	9.92 458	25	0.07 542	9.88 394	11	57	3	1.3 1.2
4	9.80 867	15	9.92 484	26	0.07 516	9.88 383	11	56	4	1.7 1.7
5	9.80 882	15	9.92 510	26	0.07 490	9.88 372	10	55	5	2.2 2.1
6	9.80 897	15	9.92 535	25	0.07 465	9.88 362	11	54	6	2.6 2.5
7	9.80 912	15	9.92 561	26	0.07 439	9.88 351	11	53	7	3.0 2.9
8	9.80 927	15	9.92 587	26	0.07 413	9.88 340	10	52	8	3.5 3.3
9	9.80 942	15	9.92 612	25	0.07 388	9.88 330	11	51	9	3.9 3.8
10	9.80 957	15	9.92 638	26	0.07 362	9.88 319	11	50	10	4.3 4.2
11	9.80 972	15	9.92 663	25	0.07 337	9.88 308	11	49	20	8.7 8.3
12	9.80 987	15	9.92 689	26	0.07 311	9.88 298	10	48	30	13.0 12.5
13	9.81 002	15	9.92 715	26	0.07 285	9.88 287	11	47	40	17.3 16.7
14	9.81 017	15	9.92 740	25	0.07 260	9.88 276	11	46	50	21.7 20.8
15	9.81 032	15	9.92 766	26	0.07 234	9.88 266	10	45		15 14
16	9.81 047	15	9.92 792	26	0.07 208	9.88 255	11	44	1	0.2 0.2
17	9.81 061	14	9.92 817	25	0.07 183	9.88 244	11	43	2	0.5 0.5
18	9.81 076	15	9.92 843	26	0.07 157	9.88 234	10	42	3	0.8 0.7
19	9.81 091	15	9.92 868	25	0.07 132	9.88 223	11	41	4	1.0 0.9
20	9.81 106	15	9.92 894	26	0.07 106	9.88 212	11	40	5	1.2 1.2
21	9.81 121	15	9.92 920	26	0.07 080	9.88 201	11	39	6	1.5 1.4
22	9.81 136	15	9.92 945	25	0.07 055	9.88 191	10	38	7	1.8 1.6
23	9.81 151	15	9.92 971	26	0.07 029	9.88 180	11	37	8	2.0 1.9
24	9.81 166	15	9.92 996	25	0.07 004	9.88 169	11	36	9	2.2 2.1
25	9.81 180	14	9.93 022	26	0.06 978	9.88 158	11	35	10	2.5 2.3
26	9.81 195	15	9.93 048	26	0.06 952	9.88 148	10	34	20	5.0 4.7
27	9.81 210	15	9.93 073	25	0.06 927	9.88 137	11	33	30	7.5 7.0
28	9.81 225	15	9.93 099	26	0.06 901	9.88 126	11	32	40	10.0 9.3
29	9.81 240	15	9.93 124	25	0.06 876	9.88 115	11	31	50	12.5 11.7
30	9.81 254	14	9.93 150	26	0.06 850	9.88 105	10	30		11 10
31	9.81 269	15	9.93 175	25	0.06 825	9.88 094	11	29	1	0.2 0.2
32	9.81 284	15	9.93 201	26	0.06 799	9.88 083	11	28	2	0.4 0.3
33	9.81 299	15	9.93 227	26	0.06 773	9.88 072	11	27	3	0.6 0.5
34	9.81 314	15	9.93 252	25	0.06 748	9.88 061	11	26	4	0.7 0.7
35	9.81 328	14	9.93 278	26	0.06 722	9.88 051	10	25	5	0.9 0.8
36	9.81 343	15	9.93 303	25	0.06 697	9.88 040	11	24	6	1.1 1.0
37	9.81 358	15	9.93 329	26	0.06 671	9.88 029	11	23	7	1.3 1.2
38	9.81 372	14	9.93 354	25	0.06 646	9.88 018	11	22	8	1.5 1.3
39	9.81 387	15	9.93 380	26	0.06 620	9.88 007	11	21	9	1.6 1.5
40	9.81 402	15	9.93 406	26	0.06 594	9.87 996	11	20	10	1.8 1.7
41	9.81 417	15	9.93 431	25	0.06 569	9.87 985	11	19	20	3.7 3.3
42	9.81 431	14	9.93 457	26	0.06 543	9.87 975	10	18	30	5.5 5.0
43	9.81 446	15	9.93 482	25	0.06 518	9.87 964	11	17	40	7.3 6.7
44	9.81 461	15	9.93 508	26	0.06 492	9.87 953	11	16	50	9.2 8.3
45	9.81 475	14	9.93 533	25	0.06 467	9.87 942	11	15		11 10 10
46	9.81 490	15	9.93 559	26	0.06 441	9.87 931	11	14	0	26 26 25
47	9.81 505	15	9.93 584	25	0.06 416	9.87 920	11	13	1	1.2 1.3 1.3
48	9.81 519	14	9.93 610	26	0.06 390	9.87 909	11	12	2	3.5 3.9 3.8
49	9.81 534	15	9.93 636	26	0.06 364	9.87 898	11	11	3	5.9 6.5 6.2
50	9.81 549	15	9.93 661	25	0.06 339	9.87 887	11	10	4	8.3 9.1 8.8
51	9.81 563	14	9.93 687	26	0.06 313	9.87 877	11	9	5	10.6 11.7 11.2
52	9.81 578	15	9.93 712	25	0.06 288	9.87 866	11	8	6	13.0 14.3 13.8
53	9.81 592	14	9.93 738	26	0.06 262	9.87 855	11	7	7	15.4 16.9 16.2
54	9.81 607	15	9.93 763	25	0.06 237	9.87 844	11	6	8	17.7 19.5 18.8
55	9.81 622	15	9.93 789	26	0.06 211	9.87 833	11	5	9	20.1 22.1 21.2
56	9.81 636	14	9.93 814	25	0.06 186	9.87 822	11	4	10	22.5 24.7 23.8
57	9.81 651	15	9.93 840	26	0.06 160	9.87 811	11	3	11	24.8 — —
58	9.81 665	14	9.93 865	25	0.06 135	9.87 800	11	2		
59	9.81 680	15	9.93 891	26	0.06 109	9.87 789	11	1		
60	9.81 694	14	9.93 916	25	0.06 084	9.87 778	11	0		
	L Cos	d	L Cot	c d	L Tan	L Sin	d			P P

L Sin		d	L Tan	c d	L Cot	L Cos	d	P P			
0	9.81 694	15	9.93 916	26	0.06 084	9.87 778	60				
1	9.81 709	14	9.93 942	25	0.06 058	9.87 767	59		26	25	
2	9.81 723	15	9.93 967	26	0.06 033	9.87 756	58	1	0.4	0.4	
3	9.81 738	14	9.93 993	25	0.06 007	9.87 745	57	2	0.9	0.8	
4	9.81 752	15	9.94 018	26	0.05 982	9.87 734	56	3	1.3	1.2	
5	9.81 767	14	9.94 044	25	0.05 956	9.87 723	55	4	1.7	1.7	
6	9.81 781	15	9.94 069	26	0.05 931	9.87 712	54	5	2.2	2.1	
7	9.81 796	14	9.94 095	25	0.05 905	9.87 701	53	6	2.6	2.5	
8	9.81 810	15	9.94 120	26	0.05 880	9.87 690	52	7	3.0	2.9	
9	9.81 825	14	9.94 146	25	0.05 854	9.87 679	51	8	3.5	3.3	
10	9.81 839	15	9.94 171	26	0.05 829	9.87 668	50	9	3.9	3.8	
11	9.81 854	14	9.94 197	25	0.05 803	9.87 657	49	10	4.3	4.2	
12	9.81 868	15	9.94 222	26	0.05 778	9.87 646	48	20	8.7	8.3	
13	9.81 882	14	9.94 248	25	0.05 752	9.87 635	47	30	13.0	12.5	
14	9.81 897	15	9.94 273	26	0.05 727	9.87 624	46	40	17.3	16.7	
15	9.81 911	14	9.94 299	25	0.05 701	9.87 613	45	50	21.7	20.8	
16	9.81 926	15	9.94 324	26	0.05 676	9.87 601	44		15	14	
17	9.81 940	14	9.94 350	25	0.05 650	9.87 590	43	1	0.2	0.2	
18	9.81 955	15	9.94 375	26	0.05 625	9.87 579	42	2	0.5	0.5	
19	9.81 969	14	9.94 401	25	0.05 599	9.87 568	41	3	0.8	0.7	
20	9.81 983	15	9.94 426	26	0.05 574	9.87 557	40	4	1.0	0.9	
21	9.81 998	14	9.94 452	25	0.05 548	9.87 546	39	5	1.2	1.2	
22	9.82 012	15	9.94 477	26	0.05 523	9.87 535	38	6	1.5	1.4	
23	9.82 026	14	9.94 503	25	0.05 497	9.87 524	37	7	1.8	1.6	
24	9.82 041	15	9.94 528	26	0.05 472	9.87 513	36	8	2.0	1.9	
25	9.82 055	14	9.94 554	25	0.05 446	9.87 501	35	9	2.2	2.1	
26	9.82 069	15	9.94 579	26	0.05 421	9.87 490	34	10	2.5	2.3	
27	9.82 084	14	9.94 604	25	0.05 396	9.87 479	33	20	5.0	4.7	
28	9.82 098	15	9.94 630	26	0.05 370	9.87 468	32	30	7.5	7.0	
29	9.82 112	14	9.94 655	25	0.05 345	9.87 457	31	40	10.0	9.3	
30	9.82 126	15	9.94 681	26	0.05 319	9.87 446	30	50	12.5	11.7	
31	9.82 141	14	9.94 706	25	0.05 294	9.87 434	29		12	11	
32	9.82 155	15	9.94 732	26	0.05 268	9.87 423	28	1	0.2	0.2	
33	9.82 169	14	9.94 757	25	0.05 243	9.87 412	27	2	0.4	0.4	
34	9.82 184	15	9.94 783	26	0.05 217	9.87 401	26	3	0.6	0.6	
35	9.82 198	14	9.94 808	25	0.05 192	9.87 390	25	4	0.8	0.7	
36	9.82 212	15	9.94 834	26	0.05 166	9.87 378	24	5	1.0	0.9	
37	9.82 226	14	9.94 859	25	0.05 141	9.87 367	23	6	1.2	1.1	
38	9.82 240	15	9.94 884	26	0.05 116	9.87 356	22	7	1.4	1.3	
39	9.82 255	14	9.94 910	25	0.05 090	9.87 345	21	8	1.6	1.5	
40	9.82 269	15	9.94 935	26	0.05 065	9.87 334	20	9	1.8	1.6	
41	9.82 283	14	9.94 961	25	0.05 039	9.87 322	19	10	2.0	1.8	
42	9.82 297	15	9.94 986	26	0.05 014	9.87 311	18	20	4.0	3.7	
43	9.82 311	14	9.95 012	25	0.04 988	9.87 300	17	30	6.0	5.5	
44	9.82 326	15	9.95 037	26	0.04 963	9.87 288	16	40	8.0	7.3	
45	9.82 340	14	9.95 062	25	0.04 938	9.87 277	15	50	10.0	9.2	
46	9.82 354	15	9.95 088	26	0.04 912	9.87 266	14		12	12	11
47	9.82 368	14	9.95 113	25	0.04 887	9.87 255	13		26	25	25
48	9.82 382	15	9.95 139	26	0.04 861	9.87 243	12				
49	9.82 396	14	9.95 164	25	0.04 836	9.87 232	11	0	1.1	1.1	1.1
50	9.82 410	15	9.95 190	26	0.04 810	9.87 221	10	1	3.2	3.1	3.4
51	9.82 424	14	9.95 215	25	0.04 785	9.87 209	9	2	5.4	5.2	5.7
52	9.82 439	15	9.95 240	26	0.04 760	9.87 198	8	3	7.6	7.3	7.9
53	9.82 453	14	9.95 266	25	0.04 734	9.87 187	7	4	9.8	9.4	10.2
54	9.82 467	15	9.95 291	26	0.04 709	9.87 175	6	5	11.9	11.5	12.5
55	9.82 481	14	9.95 317	25	0.04 683	9.87 164	5	6	14.1	13.5	14.8
56	9.82 495	15	9.95 342	26	0.04 658	9.87 153	4	7	16.2	15.6	17.1
57	9.82 509	14	9.95 368	25	0.04 632	9.87 141	3	8	18.4	17.7	19.3
58	9.82 523	15	9.95 393	26	0.04 607	9.87 130	2	9	20.6	19.8	21.6
59	9.82 537	14	9.95 418	25	0.04 582	9.87 119	1	10	22.8	21.9	23.9
60	9.82 551	15	9.95 444	26	0.04 556	9.87 107	0	11	24.9	23.9	—
	L Cos	d	L Cot	c d	L Tan	L Sin	d		P P		

	L Sin	d	L Tan	c d	L Cot	L Cos	d		P	P
0	9.82 551		9.95 444		0.04 556	9.87 107		60		26 25
1	9.82 565	14	9.95 469	25	0.04 531	9.87 096	11	59	1	0.4 0.4
2	9.82 579	14	9.95 495	26	0.04 505	9.87 085	12	58	2	0.9 0.8
3	9.82 593	14	9.95 520	25	0.04 480	9.87 073	11	57	3	1.3 1.2
4	9.82 607	14	9.95 545	26	0.04 455	9.87 062	12	56	4	1.7 1.7
5	9.82 621	14	9.95 571	25	0.04 429	9.87 050	11	55	5	2.2 2.1
6	9.82 635	14	9.95 596	26	0.04 404	9.87 039	11	54	6	2.6 2.5
7	9.82 649	14	9.95 622	25	0.04 378	9.87 028	12	53	7	3.0 2.9
8	9.82 663	14	9.95 647	25	0.04 353	9.87 016	11	52	8	3.5 3.3
9	9.82 677	14	9.95 672	26	0.04 328	9.87 005	12	51	9	3.9 3.8
10	9.82 691	14	9.95 698	25	0.04 302	9.86 993	11	50	10	4.3 4.2
11	9.82 705	14	9.95 723	25	0.04 277	9.86 982	12	49	20	8.7 8.3
12	9.82 719	14	9.95 748	26	0.04 252	9.86 970	11	48	30	13.0 12.5
13	9.82 733	14	9.95 774	25	0.04 226	9.86 959	12	47	40	17.3 16.7
14	9.82 747	14	9.95 799	26	0.04 201	9.86 947	11	46	50	21.7 20.8
15	9.82 761	14	9.95 825	25	0.04 175	9.86 936	12	45		14 13
16	9.82 775	14	9.95 850	25	0.04 150	9.86 924	11	44		
17	9.82 788	13	9.95 875	25	0.04 125	9.86 913	11	43	1	0.2 0.2
18	9.82 802	14	9.95 901	26	0.04 099	9.86 902	11	42	2	0.5 0.4
19	9.82 816	14	9.95 926	25	0.04 074	9.86 890	12	41	3	0.7 0.6
20	9.82 830	14	9.95 952	26	0.04 048	9.86 879	11	40	4	0.9 0.9
21	9.82 844	14	9.95 977	25	0.04 023	9.86 867	12	39	5	1.2 1.1
22	9.82 858	14	9.96 002	25	0.03 998	9.86 855	12	38	6	1.4 1.3
23	9.82 872	14	9.96 028	26	0.03 972	9.86 844	11	37	7	1.6 1.5
24	9.82 885	13	9.96 053	25	0.03 947	9.86 832	12	36	8	1.9 1.7
25	9.82 899	14	9.96 078	25	0.03 922	9.86 821	11	35	9	2.1 2.0
26	9.82 913	14	9.96 104	26	0.03 896	9.86 809	12	34	10	2.3 2.2
27	9.82 927	14	9.96 129	25	0.03 871	9.86 798	11	33	20	4.7 4.3
28	9.82 941	14	9.96 155	26	0.03 845	9.86 786	12	32	30	7.0 6.5
29	9.82 955	14	9.96 180	25	0.03 820	9.86 775	11	31	40	9.3 8.7
30	9.82 968	13	9.96 205	25	0.03 795	9.86 763	12	30	50	11.7 10.8
31	9.82 982	14	9.96 231	26	0.03 769	9.86 752	11	29		12 11
32	9.82 996	14	9.96 256	25	0.03 744	9.86 740	12	28		
33	9.83 010	14	9.96 281	25	0.03 719	9.86 728	12	27	1	0.2 0.2
34	9.83 023	13	9.96 307	26	0.03 693	9.86 717	11	26	2	0.4 0.4
35	9.83 037	14	9.96 332	25	0.03 668	9.86 705	12	25	3	0.6 0.6
36	9.83 051	14	9.96 357	25	0.03 643	9.86 694	11	24	4	0.8 0.7
37	9.83 065	14	9.96 383	26	0.03 617	9.86 682	12	23	5	1.0 0.9
38	9.83 078	13	9.96 408	25	0.03 592	9.86 670	12	22	6	1.2 1.1
39	9.83 092	14	9.96 433	25	0.03 567	9.86 659	12	21	7	1.4 1.3
40	9.83 106	14	9.96 459	26	0.03 541	9.86 647	11	20	8	1.6 1.5
41	9.83 120	14	9.96 484	25	0.03 516	9.86 635	12	19	9	1.8 1.6
42	9.83 133	13	9.96 510	26	0.03 490	9.86 624	12	18	10	2.0 1.8
43	9.83 147	14	9.96 535	25	0.03 465	9.86 612	11	17	20	4.0 3.7
44	9.83 161	14	9.96 560	25	0.03 440	9.86 600	12	16	30	6.0 5.5
45	9.83 174	13	9.96 586	26	0.03 414	9.86 589	12	15	40	8.0 7.3
46	9.83 188	14	9.96 611	25	0.03 389	9.86 577	11	14	50	10.0 9.2
47	9.83 202	14	9.96 636	25	0.03 364	9.86 565	12	13		12 11
48	9.83 215	13	9.96 662	26	0.03 338	9.86 554	12	12		26 26 25
49	9.83 229	14	9.96 687	25	0.03 313	9.86 542	11	11		
50	9.83 242	13	9.96 712	25	0.03 288	9.86 530	12	10	0	1.1 1.1 1.1
51	9.83 256	14	9.96 738	26	0.03 262	9.86 518	12	9	1	3.2 3.4 3.4
52	9.83 270	14	9.96 763	25	0.03 237	9.86 507	11	8	2	5.4 5.7 5.7
53	9.83 283	13	9.96 788	25	0.03 212	9.86 495	12	7	3	7.6 7.9 7.9
54	9.83 297	14	9.96 814	26	0.03 186	9.86 483	12	6	4	9.8 10.2 10.2
55	9.83 310	13	9.96 839	25	0.03 161	9.86 472	11	5	5	11.9 12.5 12.5
56	9.83 324	14	9.96 864	25	0.03 136	9.86 460	12	4	6	14.1 14.8 14.8
57	9.83 338	14	9.96 890	26	0.03 110	9.86 448	11	3	7	16.2 17.1 17.1
58	9.83 351	13	9.96 915	25	0.03 085	9.86 436	12	2	8	18.4 19.3 19.3
59	9.83 365	14	9.96 940	25	0.03 060	9.86 425	11	1	9	20.6 21.6 21.6
60	9.83 378	13	9.96 960	26	0.03 034	9.86 413	12	0	10	22.8 23.9 23.9
	L Cos	d	L Cot	c d	L Tan	L Sin	d			P P

	L Sin	d	L Tan	e d	L Cot	L Cos	d		P	P
0	9.83 378	14	9.96 966	25	0.03 034	9.86 413	12	60		
1	9.83 392	13	9.96 991	25	0.03 009	9.86 401	12	59	1	26
2	9.83 405	14	9.97 016	25	0.02 984	9.86 389	12	58	2	0.4
3	9.83 419	13	9.97 042	26	0.02 958	9.86 377	12	57	3	0.9
4	9.83 432	14	9.97 067	35	0.02 933	9.86 366	11	56	4	1.3
5	9.83 446	14	9.97 092	25	0.02 908	9.86 354	12	55	5	1.7
6	9.83 459	13	9.97 118	26	0.02 882	9.86 342	12	54	6	2.2
7	9.83 473	14	9.97 143	25	0.02 857	9.86 330	12	53	7	2.6
8	9.83 486	13	9.97 168	25	0.02 832	9.86 318	12	52	8	3.0
9	9.83 500	14	9.97 193	25	0.02 807	9.86 306	12	51	9	3.5
10	9.83 513	13	9.97 219	26	0.02 781	9.86 295	11	50	10	3.9
11	9.83 527	14	9.97 244	25	0.02 756	9.86 283	12	49	20	4.3
12	9.83 540	13	9.97 269	25	0.02 731	9.86 271	12	48	30	8.7
13	9.83 554	14	9.97 295	26	0.02 705	9.86 259	12	47	40	13.0
14	9.83 567	13	9.97 320	25	0.02 680	9.86 247	12	46	50	17.3
15	9.83 581	14	9.97 345	25	0.02 655	9.86 235	12	45		20.8
16	9.83 594	13	9.97 371	26	0.02 629	9.86 223	12	44	1	14
17	9.83 608	14	9.97 396	25	0.02 604	9.86 211	12	43	2	13
18	9.83 621	13	9.97 421	25	0.02 579	9.86 200	11	42	3	0.2
19	9.83 634	13	9.97 447	26	0.02 553	9.86 188	12	41	4	0.5
20	9.83 648	14	9.97 472	25	0.02 528	9.86 176	12	40	5	0.7
21	9.83 661	13	9.97 497	25	0.02 503	9.86 164	12	39	6	0.9
22	9.83 674	13	9.97 523	26	0.02 477	9.86 152	12	38	7	1.1
23	9.83 688	14	9.97 548	25	0.02 452	9.86 140	12	37	8	1.5
24	9.83 701	13	9.97 573	25	0.02 427	9.86 128	12	36	9	1.9
25	9.83 715	14	9.97 598	25	0.02 402	9.86 116	12	35	10	2.1
26	9.83 728	13	9.97 624	26	0.02 376	9.86 104	12	34	20	2.3
27	9.83 741	13	9.97 649	25	0.02 351	9.86 092	12	33	30	4.7
28	9.83 755	14	9.97 674	25	0.02 326	9.86 080	12	32	40	7.0
29	9.83 768	13	9.97 700	26	0.02 300	9.86 068	12	31	50	9.3
30	9.83 781	13	9.97 725	25	0.02 275	9.86 056	12	30		11.7
31	9.83 795	14	9.97 750	25	0.02 250	9.86 044	12	29	1	12
32	9.83 808	13	9.97 776	26	0.02 224	9.86 032	12	28	2	11
33	9.83 821	13	9.97 801	25	0.02 199	9.86 020	12	27	3	0.2
34	9.83 834	13	9.97 826	25	0.02 174	9.86 008	12	26	4	0.4
35	9.83 848	14	9.97 851	25	0.02 149	9.85 996	12	25	5	0.6
36	9.83 861	13	9.97 877	26	0.02 123	9.85 984	12	24	6	0.8
37	9.83 874	13	9.97 902	25	0.02 098	9.85 972	12	23	7	0.9
38	9.83 887	13	9.97 927	25	0.02 073	9.85 960	12	22	8	1.0
39	9.83 901	14	9.97 953	26	0.02 047	9.85 948	12	21	9	1.2
40	9.83 914	13	9.97 978	25	0.02 022	9.85 936	12	20	10	1.4
41	9.83 927	13	9.98 003	25	0.01 997	9.85 924	12	19	20	1.6
42	9.83 940	13	9.98 029	26	0.01 971	9.85 912	12	18	30	1.8
43	9.83 954	14	9.98 054	25	0.01 946	9.85 900	12	17	40	2.0
44	9.83 967	13	9.98 079	25	0.01 921	9.85 888	12	16	50	4.0
45	9.83 980	13	9.98 104	25	0.01 896	9.85 876	12	15		6.0
46	9.83 993	13	9.98 130	26	0.01 870	9.85 864	12	14		8.0
47	9.84 006	13	9.98 155	25	0.01 845	9.85 851	13	13		10.0
48	9.84 020	14	9.98 180	25	0.01 820	9.85 839	12	12		
49	9.84 033	13	9.98 206	26	0.01 794	9.85 827	12	11		
50	9.84 046	13	9.98 231	25	0.01 769	9.85 815	12	10		
51	9.84 059	13	9.98 256	25	0.01 744	9.85 803	12	9		
52	9.84 072	13	9.98 281	25	0.01 719	9.85 791	12	8		
53	9.84 085	13	9.98 307	26	0.01 693	9.85 779	12	7		
54	9.84 098	13	9.98 332	25	0.01 668	9.85 766	13	6		
55	9.84 112	14	9.98 357	25	0.01 643	9.85 754	12	5		
56	9.84 125	13	9.98 383	26	0.01 617	9.85 742	12	4		
57	9.84 138	13	9.98 408	25	0.01 592	9.85 730	12	3		
58	9.84 151	13	9.98 433	25	0.01 567	9.85 718	12	2		
59	9.84 164	13	9.98 458	25	0.01 542	9.85 706	12	1		
60	9.84 177	13	9.98 484	26	0.01 516	9.85 693	13	0		
	L Cos	d	L Cot	e d	L Tan	L Sin	d		P	P

	L Sin	d	L Tan	c d	L Cot	L Cos	d		P	P	
0	9.84 177		9.98 484		0.01 516	9.85 693		60			
1	9.84 190	13	9.98 509	25	0.01 491	9.85 681	12	59	26	25	
2	9.84 203	13	9.98 534	25	0.01 466	9.85 669	12	58	1 0.4	0.4	
3	9.84 216	13	9.98 560	26	0.01 440	9.85 657	12	57	2 0.9	0.8	
4	9.84 229	13	9.98 585	25	0.01 415	9.85 645	12	56	3 1.3	1.2	
5	9.84 242	13	9.98 610	25	0.01 390	9.85 632	13	55	4 1.7	1.7	
6	9.84 255	13	9.98 635	25	0.01 365	9.85 620	12	54	5 2.2	2.1	
7	9.84 269	14	9.98 661	26	0.01 339	9.85 608	12	53	6 2.6	2.5	
8	9.84 282	13	9.98 686	25	0.01 314	9.85 596	12	52	7 3.0	2.9	
9	9.84 295	13	9.98 711	25	0.01 289	9.85 583	13	51	8 3.5	3.3	
10	9.84 308	13	9.98 737	26	0.01 263	9.85 571	12	50	9 3.9	3.8	
11	9.84 321	13	9.98 762	25	0.01 238	9.85 559	12	49	10 4.3	4.2	
12	9.84 334	13	9.98 787	25	0.01 213	9.85 547	12	48	20 8.7	8.3	
13	9.84 347	13	9.98 812	25	0.01 188	9.85 534	13	47	30 13.0	12.5	
14	9.84 360	13	9.98 838	26	0.01 162	9.85 522	12	46	40 17.3	16.7	
15	9.84 373	13	9.98 863	25	0.01 137	9.85 510	12	45	50 21.7	20.8	
16	9.84 385	12	9.98 888	25	0.01 112	9.85 497	13	44	14	13	12
17	9.84 398	13	9.98 913	25	0.01 087	9.85 485	12	43	1 0.2	0.2	0.2
18	9.84 411	13	9.98 939	26	0.01 061	9.85 473	12	42	2 0.5	0.4	0.4
19	9.84 424	13	9.98 964	25	0.01 036	9.85 460	13	41	3 0.7	0.6	0.6
20	9.84 437	13	9.98 989	25	0.01 011	9.85 448	12	40	4 0.9	0.9	0.8
21	9.84 450	13	9.99 015	26	0.00 985	9.85 436	12	39	5 1.2	1.1	1.0
22	9.84 463	13	9.99 040	25	0.00 960	9.85 423	13	38	6 1.4	1.3	1.2
23	9.84 476	13	9.99 065	25	0.00 935	9.85 411	12	37	7 1.6	1.5	1.4
24	9.84 489	13	9.99 090	25	0.00 910	9.85 399	12	36	8 1.9	1.7	1.6
25	9.84 502	13	9.99 116	26	0.00 884	9.85 386	13	35	9 2.1	2.0	1.8
26	9.84 515	13	9.99 141	25	0.00 859	9.85 374	12	34	10 2.3	2.2	2.0
27	9.84 528	13	9.99 166	25	0.00 834	9.85 361	13	33	20 4.7	4.3	4.0
28	9.84 540	12	9.99 191	25	0.00 809	9.85 349	13	32	30 7.0	6.5	6.0
29	9.84 553	13	9.99 217	26	0.00 783	9.85 337	12	31	40 9.3	8.7	8.0
30	9.84 566	13	9.99 242	25	0.00 758	9.85 324	13	30	50 11.7	10.8	10.0
31	9.84 579	13	9.99 267	25	0.00 733	9.85 312	12	29	13	13	
32	9.84 592	13	9.99 293	26	0.00 707	9.85 299	13	28	26	25	
33	9.84 605	13	9.99 318	25	0.00 682	9.85 287	12	27	0	1.0	0.9
34	9.84 618	13	9.99 343	25	0.00 657	9.85 274	13	26	1 3.0	2.9	
35	9.84 630	12	9.99 368	25	0.00 632	9.85 262	12	25	2 5.0	4.8	
36	9.84 643	13	9.99 394	26	0.00 606	9.85 250	12	24	3 7.0	6.7	
37	9.84 656	13	9.99 419	25	0.00 581	9.85 237	13	23	4 9.0	8.7	
38	9.84 669	13	9.99 444	25	0.00 556	9.85 225	12	22	5 11.0	10.6	
39	9.84 682	13	9.99 469	25	0.00 531	9.85 212	13	21	6 13.0	12.5	
40	9.84 694	12	9.99 495	26	0.00 505	9.85 200	12	20	7 15.0	14.4	
41	9.84 707	13	9.99 520	25	0.00 480	9.85 187	13	19	8 17.0	16.3	
42	9.84 720	13	9.99 545	25	0.00 455	9.85 175	12	18	9 19.0	18.3	
43	9.84 733	13	9.99 570	25	0.00 430	9.85 162	13	17	10 21.0	20.2	
44	9.84 745	12	9.99 596	26	0.00 404	9.85 150	12	16	11 23.0	22.1	
45	9.84 758	13	9.99 621	25	0.00 379	9.85 137	12	15	12 25.0	24.1	
46	9.84 771	13	9.99 646	25	0.00 354	9.85 125	13	14	13	12	12
47	9.84 784	13	9.99 672	26	0.00 328	9.85 112	13	14	12	26	25
48	9.84 796	12	9.99 697	25	0.00 303	9.85 100	12	13			
49	9.84 809	13	9.99 722	25	0.00 278	9.85 087	13	12			
50	9.84 822	13	9.99 747	25	0.00 253	9.85 074	13	11	0	1.1	1.1
51	9.84 835	13	9.99 773	26	0.00 227	9.85 062	12	10	1 3.2	3.1	
52	9.84 847	12	9.99 798	25	0.00 202	9.85 049	13	9	2 5.4	5.2	
53	9.84 860	13	9.99 823	25	0.00 177	9.85 037	12	8	3 7.6	7.3	
54	9.84 873	13	9.99 848	25	0.00 152	9.85 024	13	7	4 9.8	9.4	
55	9.84 885	12	9.99 874	26	0.00 126	9.85 012	12	6	5 11.9	11.5	
56	9.84 898	13	9.99 899	25	0.00 101	9.84 999	13	5	6 14.1	13.5	
57	9.84 911	13	9.99 924	25	0.00 076	9.84 986	12	4	7 16.2	15.6	
58	9.84 923	12	9.99 949	25	0.00 051	9.84 974	13	3	8 18.4	17.7	
59	9.84 936	13	9.99 975	26	0.00 025	9.84 961	12	2	9 20.6	19.8	
60	9.84 949	13	0.00 000	25	0.00 000	9.84 949	13	1	10 22.8	21.9	
	L Cos	d	L Cot	c d	L Tan	L Sin	d		P	P	

**Tábua das funções trigonométricas
naturais**

DE MINUTO A MINUTO

	Sin	Tan	Cot	Cos	
0	0.0000	0.0000	∞	1.0000	60
1	0.0003	0.0003	3437.75	1.0000	59
2	0.0006	0.0006	1718.87	1.0000	58
3	0.0009	0.0009	1145.92	1.0000	57
4	0.0012	0.0012	859.436	1.0000	56
5	0.0015	0.0015	687.549	1.0000	55
6	0.0017	0.0017	572.957	1.0000	54
7	0.0020	0.0020	491.106	1.0000	53
8	0.0023	0.0023	429.718	1.0000	52
9	0.0026	0.0026	381.971	1.0000	51
10	0.0029	0.0029	343.774	1.0000	50
11	0.0032	0.0032	312.521	1.0000	49
12	0.0035	0.0035	286.478	1.0000	48
13	0.0038	0.0038	264.441	1.0000	47
14	0.0041	0.0041	245.552	1.0000	46
15	0.0044	0.0044	229.182	1.0000	45
16	0.0047	0.0047	214.858	1.0000	44
17	0.0049	0.0049	202.219	1.0000	43
18	0.0052	0.0052	190.984	1.0000	42
19	0.0055	0.0055	180.932	1.0000	41
20	0.0058	0.0058	171.885	1.0000	40
21	0.0061	0.0061	163.700	1.0000	39
22	0.0064	0.0064	156.259	1.0000	38
23	0.0067	0.0067	149.465	1.0000	37
24	0.0070	0.0070	143.237	1.0000	36
25	0.0073	0.0073	137.507	1.0000	35
26	0.0076	0.0076	132.219	1.0000	34
27	0.0079	0.0079	127.321	1.0000	33
28	0.0081	0.0081	122.774	1.0000	32
29	0.0084	0.0084	118.540	1.0000	31
30	0.0087	0.0087	114.589	1.0000	30
31	0.0090	0.0090	110.892	1.0000	29
32	0.0093	0.0093	107.426	1.0000	28
33	0.0096	0.0096	104.171	1.0000	27
34	0.0099	0.0099	101.107	1.0000	26
35	0.0102	0.0102	98.2179	0.9999	25
36	0.0105	0.0105	95.4895	0.9999	24
37	0.0108	0.0108	92.9085	0.9999	23
38	0.0111	0.0111	90.4633	0.9999	22
39	0.0113	0.0113	88.1436	0.9999	21
40	0.0116	0.0116	85.9398	0.9999	20
41	0.0119	0.0119	83.8435	0.9999	19
42	0.0122	0.0122	81.8470	0.9999	18
43	0.0125	0.0125	79.9434	0.9999	17
44	0.0128	0.0128	78.1263	0.9999	16
45	0.0131	0.0131	76.3900	0.9999	15
46	0.0134	0.0134	74.7292	0.9999	14
47	0.0137	0.0137	73.1390	0.9999	13
48	0.0140	0.0140	71.6151	0.9999	12
49	0.0143	0.0143	70.1533	0.9999	11
50	0.0145	0.0145	68.7501	0.9999	10
51	0.0148	0.0148	67.4019	0.9999	9
52	0.0151	0.0151	66.1055	0.9999	8
53	0.0154	0.0154	64.8580	0.9999	7
54	0.0157	0.0157	63.6567	0.9999	6
55	0.0160	0.0160	62.4992	0.9999	5
56	0.0163	0.0163	61.3820	0.9999	4
57	0.0166	0.0166	60.3058	0.9999	3
58	0.0169	0.0169	59.2659	0.9999	2
59	0.0172	0.0172	58.2612	0.9999	1
60	0.0175	0.0175	57.2900	0.9998	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.0175	0.0175	57.2900	0.9998	60
1	0.0177	0.0177	56.3506	0.9998	59
2	0.0180	0.0180	55.4415	0.9998	58
3	0.0183	0.0183	54.5613	0.9998	57
4	0.0186	0.0186	53.7086	0.9998	56
5	0.0189	0.0189	52.8821	0.9998	55
6	0.0192	0.0192	52.0807	0.9998	54
7	0.0195	0.0195	51.3032	0.9998	53
8	0.0198	0.0198	50.5485	0.9998	52
9	0.0201	0.0201	49.8157	0.9998	51
10	0.0204	0.0204	49.1039	0.9998	50
11	0.0207	0.0207	48.4121	0.9998	49
12	0.0209	0.0209	47.7395	0.9998	48
13	0.0212	0.0212	47.0853	0.9998	47
14	0.0215	0.0215	46.4489	0.9998	46
15	0.0218	0.0218	45.8294	0.9998	45
16	0.0221	0.0221	45.2261	0.9998	44
17	0.0224	0.0224	44.6386	0.9997	43
18	0.0227	0.0227	44.0661	0.9997	42
19	0.0230	0.0230	43.5081	0.9997	41
20	0.0233	0.0233	42.9641	0.9997	40
21	0.0236	0.0236	42.4335	0.9997	39
22	0.0239	0.0239	41.9158	0.9997	38
23	0.0241	0.0241	41.4106	0.9997	37
24	0.0244	0.0244	40.9174	0.9997	36
25	0.0247	0.0247	40.4358	0.9997	35
26	0.0250	0.0250	39.9655	0.9997	34
27	0.0253	0.0253	39.5059	0.9997	33
28	0.0256	0.0256	39.0568	0.9997	32
29	0.0259	0.0259	38.6177	0.9997	31
30	0.0262	0.0262	38.1885	0.9997	30
31	0.0265	0.0265	37.7686	0.9996	29
32	0.0268	0.0268	37.3579	0.9996	28
33	0.0270	0.0271	36.9560	0.9996	27
34	0.0273	0.0274	36.5627	0.9996	26
35	0.0276	0.0276	36.1776	0.9996	25
36	0.0279	0.0279	35.8006	0.9996	24
37	0.0282	0.0282	35.4313	0.9996	23
38	0.0285	0.0285	35.0695	0.9996	22
	0.0288	0.0288	34.7151	0.9996	21
40	0.0291	0.0291	34.3678	0.9996	20
41	0.0294	0.0294	34.0273	0.9996	19
42	0.0297	0.0297	33.6935	0.9996	18
43	0.0300	0.0300	33.3662	0.9996	17
44	0.0302	0.0303	33.0452	0.9995	16
45	0.0305	0.0306	32.7303	0.9995	15
46	0.0308	0.0308	32.4213	0.9995	14
47	0.0311	0.0311	32.1181	0.9995	13
48	0.0314	0.0314	31.8205	0.9995	12
49	0.0317	0.0317	31.5284	0.9995	11
50	0.0320	0.0320	31.2416	0.9995	10
51	0.0323	0.0323	30.9599	0.9995	9
52	0.0326	0.0326	30.6833	0.9995	8
53	0.0329	0.0329	30.4116	0.9995	7
54	0.0332	0.0332	30.1446	0.9995	6
55	0.0334	0.0335	29.8823	0.9994	5
56	0.0337	0.0338	29.6245	0.9994	4
57	0.0340	0.0340	29.3711	0.9994	3
58	0.0343	0.0343	29.1220	0.9994	2
59	0.0346	0.0346	28.8771	0.9994	1
60	0.0349	0.0349	28.6363	0.9994	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.0349	0.0349	28.6363	0.9994	60
1	0.0352	0.0352	28.3994	0.9994	59
2	0.0355	0.0355	28.1664	0.9994	58
3	0.0358	0.0358	27.9372	0.9994	57
4	0.0361	0.0361	27.7117	0.9993	56
5	0.0364	0.0364	27.4899	0.9993	55
6	0.0366	0.0367	27.2715	0.9993	54
7	0.0369	0.0370	27.0566	0.9993	53
8	0.0372	0.0373	26.8450	0.9993	52
9	0.0375	0.0375	26.6367	0.9993	51
10	0.0378	0.0378	26.4316	0.9993	50
11	0.0381	0.0381	26.2296	0.9993	49
12	0.0384	0.0384	26.0307	0.9993	48
13	0.0387	0.0387	25.8348	0.9993	47
14	0.0390	0.0390	25.6418	0.9992	46
15	0.0393	0.0393	25.4517	0.9992	45
16	0.0396	0.0396	25.2644	0.9992	44
17	0.0398	0.0399	25.0798	0.9992	43
18	0.0401	0.0402	24.8978	0.9992	42
19	0.0404	0.0405	24.7185	0.9992	41
20	0.0407	0.0407	24.5418	0.9992	40
21	0.0410	0.0410	24.3675	0.9992	39
22	0.0413	0.0413	24.1957	0.9991	38
23	0.0416	0.0416	24.0263	0.9991	37
24	0.0419	0.0419	23.8593	0.9991	36
25	0.0422	0.0422	23.6945	0.9991	35
26	0.0425	0.0425	23.5321	0.9991	34
27	0.0427	0.0428	23.3718	0.9991	33
28	0.0430	0.0431	23.2137	0.9991	32
29	0.0433	0.0434	23.0577	0.9991	31
30	0.0436	0.0437	22.9038	0.9990	30
31	0.0439	0.0440	22.7519	0.9990	29
32	0.0442	0.0442	22.6020	0.9990	28
33	0.0445	0.0445	22.4541	0.9990	27
34	0.0448	0.0448	22.3081	0.9990	26
35	0.0451	0.0451	22.1640	0.9990	25
36	0.0454	0.0454	22.0217	0.9990	24
37	0.0457	0.0457	21.8813	0.9990	23
38	0.0459	0.0460	21.7426	0.9989	22
39	0.0462	0.0463	21.6056	0.9989	21
40	0.0465	0.0466	21.4704	0.9989	20
41	0.0468	0.0469	21.3369	0.9989	19
42	0.0471	0.0472	21.2049	0.9989	18
43	0.0474	0.0475	21.0747	0.9989	17
44	0.0477	0.0477	20.9460	0.9989	16
45	0.0480	0.0480	20.8188	0.9988	15
46	0.0483	0.0483	20.6932	0.9988	14
47	0.0486	0.0486	20.5691	0.9988	13
48	0.0488	0.0489	20.4465	0.9988	12
49	0.0491	0.0492	20.3253	0.9988	11
50	0.0494	0.0495	20.2056	0.9988	10
51	0.0497	0.0498	20.0872	0.9988	9
52	0.0500	0.0501	19.9702	0.9987	8
53	0.0503	0.0504	19.8546	0.9987	7
54	0.0506	0.0507	19.7403	0.9987	6
55	0.0509	0.0509	19.6273	0.9987	5
56	0.0512	0.0512	19.5156	0.9987	4
57	0.0515	0.0515	19.4051	0.9987	3
58	0.0518	0.0518	19.2959	0.9987	2
59	0.0520	0.0521	19.1879	0.9986	1
60	0.0523	0.0524	19.0811	0.9986	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.0523	0.0524	19.0811	0.9986	60
1	0.0526	0.0527	18.9755	0.9986	59
2	0.0529	0.0530	18.8711	0.9986	58
3	0.0532	0.0533	18.7678	0.9986	57
4	0.0535	0.0536	18.6656	0.9986	56
5	0.0538	0.0539	18.5645	0.9986	55
6	0.0541	0.0542	18.4645	0.9985	54
7	0.0544	0.0544	18.3655	0.9985	53
8	0.0547	0.0547	18.2677	0.9985	52
9	0.0550	0.0550	18.1708	0.9985	51
10	0.0552	0.0553	18.0750	0.9985	50
11	0.0555	0.0556	17.9802	0.9985	49
12	0.0558	0.0559	17.8863	0.9984	48
13	0.0561	0.0562	17.7934	0.9984	47
14	0.0564	0.0565	17.7015	0.9984	46
15	0.0567	0.0568	17.6106	0.9984	45
16	0.0570	0.0571	17.5205	0.9984	44
17	0.0573	0.0574	17.4314	0.9984	43
18	0.0576	0.0577	17.3432	0.9983	42
19	0.0579	0.0580	17.2558	0.9983	41
20	0.0581	0.0582	17.1693	0.9983	40
21	0.0584	0.0585	17.0837	0.9983	39
22	0.0587	0.0588	16.9990	0.9983	38
23	0.0590	0.0591	16.9150	0.9983	37
24	0.0593	0.0594	16.8319	0.9982	36
25	0.0596	0.0597	16.7496	0.9982	35
26	0.0599	0.0600	16.6681	0.9982	34
27	0.0602	0.0603	16.5874	0.9982	33
28	0.0605	0.0606	16.5075	0.9982	32
29	0.0608	0.0609	16.4283	0.9982	31
30	0.0610	0.0612	16.3499	0.9981	30
31	0.0613	0.0615	16.2722	0.9981	29
32	0.0616	0.0617	16.1952	0.9981	28
33	0.0619	0.0620	16.1190	0.9981	27
34	0.0622	0.0623	16.0435	0.9981	26
35	0.0625	0.0626	15.9687	0.9980	25
36	0.0628	0.0629	15.8945	0.9980	24
37	0.0631	0.0632	15.8211	0.9980	23
38	0.0634	0.0635	15.7483	0.9980	22
39	0.0637	0.0638	15.6762	0.9980	21
40	0.0640	0.0641	15.6048	0.9980	20
41	0.0642	0.0644	15.5340	0.9979	19
42	0.0645	0.0647	15.4638	0.9979	18
43	0.0648	0.0650	15.3943	0.9979	17
44	0.0651	0.0653	15.3254	0.9979	16
45	0.0654	0.0655	15.2571	0.9979	15
46	0.0657	0.0658	15.1893	0.9978	14
47	0.0660	0.0661	15.1222	0.9978	13
48	0.0663	0.0664	15.0557	0.9978	12
49	0.0666	0.0667	14.9898	0.9978	11
50	0.0669	0.0670	14.9244	0.9978	10
51	0.0671	0.0673	14.8596	0.9977	9
52	0.0674	0.0676	14.7954	0.9977	8
53	0.0677	0.0679	14.7317	0.9977	7
54	0.0680	0.0682	14.6685	0.9977	6
55	0.0683	0.0685	14.6059	0.9977	5
56	0.0686	0.0688	14.5438	0.9976	4
57	0.0689	0.0690	14.4823	0.9976	3
58	0.0692	0.0693	14.4212	0.9976	2
59	0.0695	0.0696	14.3607	0.9976	1
60	0.0698	0.0699	14.3007	0.9976	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.0698	0.0699	14.3007	0.9976	60
1	0.0700	0.0702	14.2411	0.9975	59
2	0.0703	0.0705	14.1821	0.9975	58
3	0.0706	0.0708	14.1235	0.9975	57
4	0.0709	0.0711	14.0655	0.9975	56
5	0.0712	0.0714	14.0079	0.9975	55
6	0.0715	0.0717	13.9507	0.9974	54
7	0.0718	0.0720	13.8940	0.9974	53
8	0.0721	0.0723	13.8378	0.9974	52
9	0.0724	0.0726	13.7821	0.9974	51
10	0.0727	0.0729	13.7267	0.9974	50
11	0.0729	0.0731	13.6719	0.9973	49
12	0.0732	0.0734	13.6174	0.9973	48
13	0.0735	0.0737	13.5634	0.9973	47
14	0.0738	0.0740	13.5098	0.9973	46
15	0.0741	0.0743	13.4566	0.9973	45
16	0.0744	0.0746	13.4039	0.9972	44
17	0.0747	0.0749	13.3515	0.9972	43
18	0.0750	0.0752	13.2996	0.9972	42
19	0.0753	0.0755	13.2480	0.9972	41
20	0.0756	0.0758	13.1969	0.9971	40
21	0.0758	0.0761	13.1461	0.9971	39
22	0.0761	0.0764	13.0958	0.9971	38
23	0.0764	0.0767	13.0458	0.9971	37
24	0.0767	0.0769	12.9962	0.9971	36
25	0.0770	0.0772	12.9469	0.9970	35
26	0.0773	0.0775	12.8981	0.9970	34
27	0.0776	0.0778	12.8496	0.9970	33
28	0.0779	0.0781	12.8014	0.9970	32
29	0.0782	0.0784	12.7536	0.9969	31
30	0.0785	0.0787	12.7062	0.9969	30
31	0.0787	0.0790	12.6591	0.9969	29
32	0.0790	0.0793	12.6124	0.9969	28
33	0.0793	0.0796	12.5660	0.9968	27
34	0.0796	0.0799	12.5199	0.9968	26
35	0.0799	0.0802	12.4742	0.9968	25
36	0.0802	0.0805	12.4288	0.9968	24
37	0.0805	0.0808	12.3838	0.9968	23
38	0.0808	0.0810	12.3390	0.9967	22
39	0.0811	0.0813	12.2946	0.9967	21
40	0.0814	0.0816	12.2505	0.9967	20
41	0.0816	0.0819	12.2067	0.9967	19
42	0.0819	0.0822	12.1632	0.9966	18
43	0.0822	0.0825	12.1201	0.9966	17
44	0.0825	0.0828	12.0772	0.9966	16
45	0.0828	0.0831	12.0346	0.9966	15
46	0.0831	0.0834	11.9923	0.9965	14
47	0.0834	0.0837	11.9504	0.9965	13
48	0.0837	0.0840	11.9087	0.9965	12
49	0.0840	0.0843	11.8673	0.9965	11
50	0.0843	0.0846	11.8262	0.9964	10
51	0.0845	0.0849	11.7853	0.9964	9
52	0.0848	0.0851	11.7448	0.9964	8
53	0.0851	0.0854	11.7045	0.9964	7
54	0.0854	0.0857	11.6645	0.9963	6
55	0.0857	0.0860	11.6248	0.9963	5
56	0.0860	0.0863	11.5853	0.9963	4
57	0.0863	0.0866	11.5461	0.9963	3
58	0.0866	0.0869	11.5072	0.9962	2
59	0.0869	0.0872	11.4685	0.9962	1
60	0.0872	0.0875	11.4301	0.9962	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.0872	0.0875	11.4301	0.9962	60
1	0.0874	0.0878	11.3919	0.9962	59
2	0.0877	0.0881	11.3540	0.9961	58
3	0.0880	0.0884	11.3163	0.9961	57
4	0.0883	0.0887	11.2789	0.9961	56
5	0.0886	0.0890	11.2417	0.9961	55
6	0.0889	0.0892	11.2048	0.9960	54
7	0.0892	0.0895	11.1681	0.9960	53
8	0.0895	0.0898	11.1316	0.9960	52
9	0.0898	0.0901	11.0954	0.9960	51
10	0.0901	0.0904	11.0594	0.9959	50
11	0.0903	0.0907	11.0237	0.9959	49
12	0.0906	0.0910	10.9882	0.9959	48
13	0.0909	0.0913	10.9529	0.9959	47
14	0.0912	0.0916	10.9178	0.9958	46
15	0.0915	0.0919	10.8829	0.9958	45
16	0.0918	0.0922	10.8483	0.9958	44
17	0.0921	0.0925	10.8139	0.9958	43
18	0.0924	0.0928	10.7797	0.9957	42
19	0.0927	0.0931	10.7457	0.9957	41
20	0.0929	0.0934	10.7119	0.9957	40
21	0.0932	0.0936	10.6783	0.9956	39
22	0.0935	0.0939	10.6450	0.9956	38
23	0.0938	0.0942	10.6118	0.9956	37
24	0.0941	0.0945	10.5789	0.9956	36
25	0.0944	0.0948	10.5462	0.9955	35
26	0.0947	0.0951	10.5136	0.9955	34
27	0.0950	0.0954	10.4813	0.9955	33
28	0.0953	0.0957	10.4491	0.9955	32
29	0.0956	0.0960	10.4172	0.9954	31
30	0.0958	0.0963	10.3854	0.9954	30
31	0.0961	0.0966	10.3538	0.9954	29
32	0.0964	0.0969	10.3224	0.9953	28
33	0.0967	0.0972	10.2913	0.9953	27
34	0.0970	0.0975	10.2602	0.9953	26
35	0.0973	0.0978	10.2294	0.9953	25
36	0.0976	0.0981	10.1988	0.9952	24
37	0.0979	0.0983	10.1683	0.9952	23
38	0.0982	0.0986	10.1381	0.9952	22
39	0.0985	0.0989	10.1080	0.9951	21
40	0.0987	0.0992	10.0780	0.9951	20
41	0.0990	0.0995	10.0483	0.9951	19
42	0.0993	0.0998	10.0187	0.9951	18
43	0.0996	0.1001	9.9893	0.9950	17
44	0.0999	0.1004	9.9601	0.9950	16
45	0.1002	0.1007	9.9310	0.9950	15
46	0.1005	0.1010	9.9021	0.9949	14
47	0.1008	0.1013	9.8734	0.9949	13
48	0.1011	0.1016	9.8448	0.9949	12
49	0.1013	0.1019	9.8164	0.9949	11
50	0.1016	0.1022	9.7882	0.9948	10
51	0.1019	0.1025	9.7601	0.9948	9
52	0.1022	0.1028	9.7322	0.9948	8
53	0.1025	0.1030	9.7044	0.9947	7
54	0.1028	0.1033	9.6768	0.9947	6
55	0.1031	0.1036	9.6493	0.9947	5
56	0.1034	0.1039	9.6220	0.9946	4
57	0.1037	0.1042	9.5949	0.9946	3
58	0.1039	0.1045	9.5679	0.9946	2
59	0.1042	0.1048	9.5411	0.9946	1
60	0.1045	0.1051	9.5144	0.9945	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.1045	0.1051	9.5144	0.9945	60
1	0.1048	0.1054	9.4878	0.9945	59
2	0.1051	0.1057	9.4614	0.9945	58
3	0.1054	0.1060	9.4352	0.9944	57
4	0.1057	0.1063	9.4090	0.9944	56
5	0.1060	0.1066	9.3831	0.9944	55
6	0.1063	0.1069	9.3572	0.9943	54
7	0.1066	0.1072	9.3315	0.9943	53
8	0.1068	0.1075	9.3060	0.9943	52
9	0.1071	0.1078	9.2806	0.9942	51
10	0.1074	0.1080	9.2553	0.9942	50
11	0.1077	0.1083	9.2302	0.9942	49
12	0.1080	0.1086	9.2052	0.9942	48
13	0.1083	0.1089	9.1803	0.9941	47
14	0.1086	0.1092	9.1555	0.9941	46
15	0.1089	0.1095	9.1309	0.9941	45
16	0.1092	0.1098	9.1065	0.9940	44
17	0.1094	0.1101	9.0821	0.9940	43
18	0.1097	0.1104	9.0579	0.9940	42
19	0.1100	0.1107	9.0338	0.9939	41
20	0.1103	0.1110	9.0098	0.9939	40
21	0.1106	0.1113	8.9860	0.9939	39
22	0.1109	0.1116	8.9623	0.9938	38
23	0.1112	0.1119	8.9387	0.9938	37
24	0.1115	0.1122	8.9152	0.9938	36
25	0.1118	0.1125	8.8919	0.9937	35
26	0.1120	0.1128	8.8686	0.9937	34
27	0.1123	0.1131	8.8455	0.9937	33
28	0.1126	0.1133	8.8225	0.9936	32
29	0.1129	0.1136	8.7996	0.9936	31
30	0.1132	0.1139	8.7769	0.9936	30
31	0.1135	0.1142	8.7542	0.9935	29
32	0.1138	0.1145	8.7317	0.9935	28
33	0.1141	0.1148	8.7093	0.9935	27
34	0.1144	0.1151	8.6870	0.9934	26
35	0.1146	0.1154	8.6648	0.9934	25
36	0.1149	0.1157	8.6427	0.9934	24
37	0.1152	0.1160	8.6208	0.9933	23
38	0.1155	0.1163	8.5989	0.9933	22
39	0.1158	0.1166	8.5772	0.9933	21
40	0.1161	0.1169	8.5555	0.9932	20
41	0.1164	0.1172	8.5340	0.9932	19
42	0.1167	0.1175	8.5126	0.9932	18
43	0.1170	0.1178	8.4913	0.9931	17
44	0.1172	0.1181	8.4701	0.9931	16
45	0.1175	0.1184	8.4490	0.9931	15
46	0.1178	0.1187	8.4280	0.9930	14
47	0.1181	0.1189	8.4071	0.9930	13
48	0.1184	0.1192	8.3863	0.9930	12
49	0.1187	0.1195	8.3656	0.9929	11
50	0.1190	0.1198	8.3450	0.9929	10
51	0.1193	0.1201	8.3245	0.9929	9
52	0.1196	0.1204	8.3041	0.9928	8
53	0.1198	0.1207	8.2838	0.9928	7
54	0.1201	0.1210	8.2636	0.9928	6
55	0.1204	0.1213	8.2434	0.9927	5
56	0.1207	0.1216	8.2234	0.9927	4
57	0.1210	0.1219	8.2035	0.9927	3
58	0.1213	0.1222	8.1837	0.9926	2
59	0.1216	0.1225	8.1640	0.9926	1
60	0.1219	0.1228	8.1443	0.9925	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.1219	0.1228	8.1443	0.9925	60
1	0.1222	0.1231	8.1248	0.9925	59
2	0.1224	0.1234	8.1054	0.9925	58
3	0.1227	0.1237	8.0860	0.9924	57
4	0.1230	0.1240	8.0667	0.9924	56
5	0.1233	0.1243	8.0476	0.9924	55
6	0.1236	0.1246	8.0285	0.9923	54
7	0.1239	0.1249	8.0095	0.9923	53
8	0.1242	0.1251	7.9906	0.9923	52
9	0.1245	0.1254	7.9718	0.9922	51
10	0.1248	0.1257	7.9530	0.9922	50
11	0.1250	0.1260	7.9344	0.9922	49
12	0.1253	0.1263	7.9158	0.9921	48
13	0.1256	0.1266	7.8973	0.9921	47
14	0.1259	0.1269	7.8789	0.9920	46
15	0.1262	0.1272	7.8606	0.9920	45
16	0.1265	0.1275	7.8424	0.9920	44
17	0.1268	0.1278	7.8243	0.9919	43
18	0.1271	0.1281	7.8062	0.9919	42
19	0.1274	0.1284	7.7882	0.9919	41
20	0.1276	0.1287	7.7704	0.9918	40
21	0.1279	0.1290	7.7525	0.9918	39
22	0.1282	0.1293	7.7348	0.9917	38
23	0.1285	0.1296	7.7171	0.9917	37
24	0.1288	0.1299	7.6996	0.9917	36
25	0.1291	0.1302	7.6821	0.9916	35
26	0.1294	0.1305	7.6647	0.9916	34
27	0.1297	0.1308	7.6473	0.9916	33
28	0.1299	0.1311	7.6301	0.9915	32
29	0.1302	0.1314	7.6129	0.9915	31
30	0.1305	0.1317	7.5958	0.9914	30
31	0.1308	0.1319	7.5787	0.9914	29
32	0.1311	0.1322	7.5618	0.9914	28
33	0.1314	0.1325	7.5449	0.9913	27
34	0.1317	0.1328	7.5281	0.9913	26
35	0.1320	0.1331	7.5113	0.9913	25
36	0.1323	0.1334	7.4947	0.9912	24
37	0.1325	0.1337	7.4781	0.9912	23
38	0.1328	0.1340	7.4615	0.9911	22
39	0.1331	0.1343	7.4451	0.9911	21
40	0.1334	0.1346	7.4287	0.9911	20
41	0.1337	0.1349	7.4124	0.9910	19
42	0.1340	0.1352	7.3962	0.9910	18
43	0.1343	0.1355	7.3800	0.9909	17
44	0.1346	0.1358	7.3639	0.9909	16
45	0.1349	0.1361	7.3479	0.9909	15
46	0.1351	0.1364	7.3319	0.9908	14
47	0.1354	0.1367	7.3160	0.9908	13
48	0.1357	0.1370	7.3002	0.9907	12
49	0.1360	0.1373	7.2844	0.9907	11
50	0.1363	0.1376	7.2687	0.9907	10
51	0.1366	0.1379	7.2531	0.9906	9
52	0.1369	0.1382	7.2375	0.9906	8
53	0.1372	0.1385	7.2220	0.9905	7
54	0.1374	0.1388	7.2066	0.9905	6
55	0.1377	0.1391	7.1912	0.9905	5
56	0.1380	0.1394	7.1759	0.9904	4
57	0.1383	0.1397	7.1607	0.9904	3
58	0.1386	0.1399	7.1455	0.9903	2
59	0.1389	0.1402	7.1304	0.9903	1
60	0.1392	0.1405	7.1154	0.9903	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.1392	0.1405	7.1154	0.9903	60
1	0.1395	0.1408	7.1004	0.9902	59
2	0.1397	0.1411	7.0855	0.9902	58
3	0.1400	0.1414	7.0706	0.9901	57
4	0.1403	0.1417	7.0558	0.9901	56
5	0.1406	0.1420	7.0410	0.9901	55
6	0.1409	0.1423	7.0264	0.9900	54
7	0.1412	0.1426	7.0117	0.9900	53
8	0.1415	0.1429	6.9972	0.9899	52
9	0.1418	0.1432	6.9827	0.9899	51
10	0.1421	0.1435	6.9682	0.9899	50
11	0.1423	0.1438	6.9538	0.9898	49
12	0.1426	0.1441	6.9395	0.9898	48
13	0.1429	0.1444	6.9252	0.9897	47
14	0.1432	0.1447	6.9110	0.9897	46
15	0.1435	0.1450	6.8969	0.9897	45
16	0.1438	0.1453	6.8828	0.9896	44
17	0.1441	0.1456	6.8687	0.9896	43
18	0.1444	0.1459	6.8548	0.9895	42
19	0.1446	0.1462	6.8408	0.9895	41
20	0.1449	0.1465	6.8269	0.9894	40
21	0.1452	0.1468	6.8131	0.9894	39
22	0.1455	0.1471	6.7994	0.9894	38
23	0.1458	0.1474	6.7856	0.9893	37
24	0.1461	0.1477	6.7720	0.9893	36
25	0.1464	0.1480	6.7584	0.9892	35
26	0.1467	0.1483	6.7448	0.9892	34
27	0.1469	0.1486	6.7313	0.9891	33
28	0.1472	0.1489	6.7179	0.9891	32
29	0.1475	0.1492	6.7045	0.9891	31
30	0.1478	0.1495	6.6912	0.9890	30
31	0.1481	0.1497	6.6779	0.9890	29
32	0.1484	0.1500	6.6646	0.9889	28
33	0.1487	0.1503	6.6514	0.9889	27
34	0.1490	0.1506	6.6383	0.9888	26
35	0.1492	0.1509	6.6252	0.9888	25
36	0.1495	0.1512	6.6122	0.9888	24
37	0.1498	0.1515	6.5992	0.9887	23
38	0.1501	0.1518	6.5863	0.9887	22
39	0.1504	0.1521	6.5734	0.9886	21
40	0.1507	0.1524	6.5606	0.9886	20
41	0.1510	0.1527	6.5478	0.9885	19
42	0.1513	0.1530	6.5350	0.9885	18
43	0.1515	0.1533	6.5223	0.9884	17
44	0.1518	0.1536	6.5097	0.9884	16
45	0.1521	0.1539	6.4971	0.9884	15
46	0.1524	0.1542	6.4846	0.9883	14
47	0.1527	0.1545	6.4721	0.9883	13
48	0.1530	0.1548	6.4596	0.9882	12
49	0.1533	0.1551	6.4472	0.9882	11
50	0.1536	0.1554	6.4348	0.9881	10
51	0.1538	0.1557	6.4225	0.9881	9
52	0.1541	0.1560	6.4103	0.9880	8
53	0.1544	0.1563	6.3980	0.9880	7
54	0.1547	0.1566	6.3859	0.9880	6
55	0.1550	0.1569	6.3737	0.9879	5
56	0.1553	0.1572	6.3617	0.9879	4
57	0.1556	0.1575	6.3496	0.9878	3
58	0.1559	0.1578	6.3376	0.9878	2
59	0.1561	0.1581	6.3257	0.9877	1
60	0.1564	0.1584	6.3138	0.9877	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.1564	0.1584	6.3138	0.9877	60
1	0.1567	0.1587	6.3019	0.9876	59
2	0.1570	0.1590	6.2901	0.9876	58
3	0.1573	0.1593	6.2783	0.9876	57
4	0.1576	0.1596	6.2666	0.9875	56
5	0.1579	0.1599	6.2549	0.9875	55
6	0.1582	0.1602	6.2432	0.9874	54
7	0.1584	0.1605	6.2316	0.9874	53
8	0.1587	0.1608	6.2200	0.9873	52
9	0.1590	0.1611	6.2085	0.9873	51
10	0.1593	0.1614	6.1970	0.9872	50
11	0.1596	0.1617	6.1856	0.9872	49
12	0.1599	0.1620	6.1742	0.9871	48
13	0.1602	0.1623	6.1628	0.9871	47
14	0.1605	0.1626	6.1515	0.9870	46
15	0.1607	0.1629	6.1402	0.9870	45
16	0.1610	0.1632	6.1290	0.9869	44
17	0.1613	0.1635	6.1178	0.9869	43
18	0.1616	0.1638	6.1066	0.9869	42
19	0.1619	0.1641	6.0955	0.9868	41
20	0.1622	0.1644	6.0844	0.9868	40
21	0.1625	0.1647	6.0734	0.9867	39
22	0.1628	0.1650	6.0624	0.9867	38
23	0.1630	0.1653	6.0514	0.9866	37
24	0.1633	0.1655	6.0405	0.9866	36
25	0.1636	0.1658	6.0296	0.9865	35
26	0.1639	0.1661	6.0188	0.9865	34
27	0.1642	0.1664	6.0080	0.9864	33
28	0.1645	0.1667	5.9972	0.9864	32
29	0.1648	0.1670	5.9865	0.9863	31
30	0.1650	0.1673	5.9758	0.9863	30
31	0.1653	0.1676	5.9651	0.9862	29
32	0.1656	0.1679	5.9545	0.9862	28
33	0.1659	0.1682	5.9439	0.9861	27
34	0.1662	0.1685	5.9333	0.9861	26
35	0.1665	0.1688	5.9228	0.9860	25
36	0.1668	0.1691	5.9124	0.9860	24
37	0.1671	0.1694	5.9019	0.9859	23
38	0.1673	0.1697	5.8915	0.9859	22
39	0.1676	0.1700	5.8811	0.9859	21
40	0.1679	0.1703	5.8708	0.9858	20
41	0.1682	0.1706	5.8605	0.9858	19
42	0.1685	0.1709	5.8502	0.9857	18
43	0.1688	0.1712	5.8400	0.9857	17
44	0.1691	0.1715	5.8298	0.9856	16
45	0.1693	0.1718	5.8197	0.9856	15
46	0.1696	0.1721	5.8095	0.9855	14
47	0.1699	0.1724	5.7994	0.9855	13
48	0.1702	0.1727	5.7894	0.9854	12
49	0.1705	0.1730	5.7794	0.9854	11
50	0.1708	0.1733	5.7694	0.9853	10
51	0.1711	0.1736	5.7594	0.9853	9
52	0.1714	0.1739	5.7495	0.9852	8
53	0.1716	0.1742	5.7396	0.9852	7
54	0.1719	0.1745	5.7297	0.9851	6
55	0.1722	0.1748	5.7199	0.9851	5
56	0.1725	0.1751	5.7101	0.9850	4
57	0.1728	0.1754	5.7004	0.9850	3
58	0.1731	0.1757	5.6906	0.9849	2
59	0.1734	0.1760	5.6809	0.9849	1
60	0.1736	0.1763	5.6713	0.9848	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.1716	0.1763	5.6713	0.9848	60
1	0.1739	0.1766	5.6617	0.9848	59
2	0.1742	0.1769	5.6521	0.9847	58
3	0.1745	0.1772	5.6425	0.9847	57
4	0.1748	0.1775	5.6329	0.9846	56
5	0.1751	0.1778	5.6234	0.9846	55
6	0.1754	0.1781	5.6140	0.9845	54
7	0.1757	0.1784	5.6045	0.9845	53
8	0.1759	0.1787	5.5951	0.9844	52
9	0.1762	0.1790	5.5857	0.9843	51
10	0.1765	0.1793	5.5764	0.9843	50
11	0.1768	0.1796	5.5671	0.9842	49
12	0.1771	0.1799	5.5578	0.9842	48
13	0.1774	0.1802	5.5485	0.9841	47
14	0.1777	0.1805	5.5393	0.9841	46
15	0.1779	0.1808	5.5301	0.9840	45
16	0.1782	0.1811	5.5209	0.9840	44
17	0.1785	0.1814	5.5118	0.9839	43
18	0.1788	0.1817	5.5026	0.9839	42
19	0.1791	0.1820	5.4936	0.9838	41
20	0.1794	0.1823	5.4845	0.9838	40
21	0.1797	0.1826	5.4755	0.9837	39
22	0.1799	0.1829	5.4665	0.9837	38
23	0.1802	0.1832	5.4575	0.9836	37
24	0.1805	0.1835	5.4486	0.9836	36
25	0.1808	0.1838	5.4397	0.9835	35
26	0.1811	0.1841	5.4308	0.9835	34
27	0.1814	0.1844	5.4219	0.9834	33
28	0.1817	0.1847	5.4131	0.9834	32
29	0.1819	0.1850	5.4043	0.9833	31
30	0.1822	0.1853	5.3955	0.9833	30
31	0.1825	0.1856	5.3868	0.9832	29
32	0.1828	0.1859	5.3781	0.9831	28
33	0.1831	0.1862	5.3694	0.9831	27
34	0.1834	0.1865	5.3607	0.9830	26
35	0.1837	0.1868	5.3521	0.9830	25
36	0.1840	0.1871	5.3435	0.9829	24
37	0.1842	0.1874	5.3349	0.9829	23
38	0.1845	0.1877	5.3263	0.9828	22
39	0.1848	0.1880	5.3178	0.9828	21
40	0.1851	0.1883	5.3093	0.9827	20
41	0.1854	0.1887	5.3008	0.9827	19
42	0.1857	0.1890	5.2924	0.9826	18
43	0.1860	0.1893	5.2839	0.9826	17
44	0.1862	0.1896	5.2755	0.9825	16
45	0.1865	0.1899	5.2672	0.9825	15
46	0.1868	0.1902	5.2588	0.9824	14
47	0.1871	0.1905	5.2505	0.9823	13
48	0.1874	0.1908	5.2422	0.9823	12
49	0.1877	0.1911	5.2339	0.9822	11
50	0.1880	0.1914	5.2257	0.9822	10
51	0.1882	0.1917	5.2174	0.9821	9
52	0.1885	0.1920	5.2092	0.9821	8
53	0.1888	0.1923	5.2011	0.9820	7
54	0.1891	0.1926	5.1929	0.9820	6
55	0.1894	0.1929	5.1848	0.9819	5
56	0.1897	0.1932	5.1767	0.9818	4
57	0.1900	0.1935	5.1686	0.9818	3
58	0.1902	0.1938	5.1606	0.9817	2
59	0.1905	0.1941	5.1526	0.9817	1
60	0.1908	0.1944	5.1446	0.9816	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.1908	0.1944	5.1446	0.9816	60
1	0.1911	0.1947	5.1366	0.9816	59
2	0.1914	0.1950	5.1286	0.9815	58
3	0.1917	0.1953	5.1207	0.9815	57
4	0.1920	0.1955	5.1128	0.9814	56
5	0.1922	0.1959	5.1049	0.9813	55
6	0.1925	0.1962	5.0970	0.9813	54
7	0.1928	0.1965	5.0892	0.9812	53
8	0.1931	0.1968	5.0814	0.9812	52
9	0.1934	0.1971	5.0736	0.9811	51
10	0.1937	0.1974	5.0658	0.9811	50
11	0.1939	0.1977	5.0581	0.9810	49
12	0.1942	0.1980	5.0504	0.9810	48
13	0.1945	0.1983	5.0427	0.9809	47
14	0.1948	0.1986	5.0350	0.9808	46
15	0.1951	0.1989	5.0273	0.9808	45
16	0.1954	0.1992	5.0197	0.9807	44
17	0.1957	0.1995	5.0121	0.9807	43
18	0.1959	0.1998	5.0045	0.9806	42
19	0.1962	0.2001	4.9969	0.9806	41
20	0.1965	0.2004	4.9894	0.9805	40
21	0.1968	0.2007	4.9819	0.9804	39
22	0.1971	0.2010	4.9744	0.9804	38
23	0.1974	0.2013	4.9669	0.9803	37
24	0.1977	0.2016	4.9594	0.9803	36
25	0.1979	0.2019	4.9520	0.9802	35
26	0.1982	0.2022	4.9446	0.9802	34
27	0.1985	0.2025	4.9372	0.9801	33
28	0.1988	0.2028	4.9298	0.9800	32
29	0.1991	0.2031	4.9225	0.9800	31
30	0.1994	0.2035	4.9152	0.9799	30
31	0.1997	0.2038	4.9078	0.9799	29
32	0.1999	0.2041	4.9006	0.9798	28
33	0.2002	0.2044	4.8933	0.9798	27
34	0.2005	0.2047	4.8860	0.9797	26
35	0.2008	0.2050	4.8788	0.9796	25
36	0.2011	0.2053	4.8716	0.9796	24
37	0.2014	0.2056	4.8644	0.9795	23
38	0.2016	0.2059	4.8573	0.9795	22
39	0.2019	0.2062	4.8501	0.9794	21
40	0.2022	0.2065	4.8430	0.9793	20
41	0.2025	0.2068	4.8359	0.9793	19
42	0.2028	0.2071	4.8288	0.9792	18
43	0.2031	0.2074	4.8218	0.9792	17
44	0.2034	0.2077	4.8147	0.9791	16
45	0.2036	0.2080	4.8077	0.9790	15
46	0.2039	0.2083	4.8007	0.9790	14
47	0.2042	0.2086	4.7937	0.9789	13
48	0.2045	0.2089	4.7867	0.9789	12
49	0.2048	0.2092	4.7798	0.9788	11
50	0.2051	0.2095	4.7729	0.9787	10
51	0.2054	0.2098	4.7659	0.9787	9
52	0.2056	0.2101	4.7591	0.9786	8
53	0.2059	0.2104	4.7522	0.9786	7
54	0.2062	0.2107	4.7453	0.9785	6
55	0.2065	0.2110	4.7385	0.9784	5
56	0.2068	0.2113	4.7317	0.9784	4
57	0.2071	0.2116	4.7249	0.9783	3
58	0.2073	0.2119	4.7181	0.9783	2
59	0.2076	0.2123	4.7114	0.9782	1
60	0.2079	0.2126	4.7046	0.9781	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.2079	0.2126	4.7046	0.9781	60
1	0.2082	0.2129	4.6979	0.9781	59
2	0.2085	0.2132	4.6912	0.9780	58
3	0.2088	0.2135	4.6845	0.9780	57
4	0.2090	0.2138	4.6779	0.9779	56
5	0.2093	0.2141	4.6712	0.9778	55
6	0.2096	0.2144	4.6646	0.9778	54
7	0.2099	0.2147	4.6580	0.9777	53
8	0.2102	0.2150	4.6514	0.9777	52
9	0.2105	0.2153	4.6448	0.9776	51
10	0.2108	0.2156	4.6382	0.9775	50
11	0.2110	0.2159	4.6317	0.9775	49
12	0.2113	0.2162	4.6252	0.9774	48
13	0.2116	0.2165	4.6187	0.9774	47
14	0.2119	0.2168	4.6122	0.9773	46
15	0.2122	0.2171	4.6057	0.9772	45
16	0.2125	0.2174	4.5993	0.9772	44
17	0.2127	0.2177	4.5928	0.9771	43
18	0.2130	0.2180	4.5864	0.9770	42
19	0.2133	0.2183	4.5800	0.9770	41
20	0.2136	0.2186	4.5736	0.9769	40
21	0.2139	0.2189	4.5673	0.9769	39
22	0.2142	0.2193	4.5609	0.9768	38
23	0.2145	0.2196	4.5546	0.9767	37
24	0.2147	0.2199	4.5483	0.9767	36
25	0.2150	0.2202	4.5420	0.9766	35
26	0.2153	0.2205	4.5357	0.9765	34
27	0.2156	0.2208	4.5294	0.9765	33
28	0.2159	0.2211	4.5232	0.9764	32
29	0.2162	0.2214	4.5169	0.9764	31
30	0.2164	0.2217	4.5107	0.9763	30
31	0.2167	0.2220	4.5045	0.9762	29
32	0.2170	0.2223	4.4983	0.9762	28
33	0.2173	0.2226	4.4922	0.9761	27
34	0.2176	0.2229	4.4860	0.9760	26
35	0.2179	0.2232	4.4799	0.9760	25
36	0.2181	0.2235	4.4737	0.9759	24
37	0.2184	0.2238	4.4676	0.9759	23
38	0.2187	0.2241	4.4615	0.9758	22
39	0.2190	0.2244	4.4555	0.9757	21
40	0.2193	0.2247	4.4494	0.9757	20
41	0.2196	0.2251	4.4434	0.9756	19
42	0.2198	0.2254	4.4373	0.9755	18
43	0.2201	0.2257	4.4313	0.9755	17
44	0.2204	0.2260	4.4253	0.9754	16
45	0.2207	0.2263	4.4194	0.9753	15
46	0.2210	0.2266	4.4134	0.9753	14
47	0.2213	0.2269	4.4075	0.9752	13
48	0.2215	0.2272	4.4015	0.9751	12
49	0.2218	0.2275	4.3956	0.9751	11
50	0.2221	0.2278	4.3897	0.9750	10
51	0.2224	0.2281	4.3838	0.9750	9
52	0.2227	0.2284	4.3779	0.9749	8
53	0.2230	0.2287	4.3721	0.9748	7
54	0.2233	0.2290	4.3662	0.9748	6
55	0.2235	0.2293	4.3604	0.9747	5
56	0.2238	0.2296	4.3546	0.9746	4
57	0.2241	0.2299	4.3488	0.9746	3
58	0.2244	0.2303	4.3430	0.9745	2
59	0.2247	0.2306	4.3372	0.9744	1
60	0.2250	0.2309	4.3315	0.9744	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.2230	0.2309	4.3315	0.9744	60
1	0.2252	0.2312	4.3257	0.9743	59
2	0.2255	0.2315	4.3200	0.9742	58
3	0.2258	0.2318	4.3143	0.9742	57
4	0.2261	0.2321	4.3086	0.9741	56
5	0.2264	0.2324	4.3029	0.9740	55
6	0.2267	0.2327	4.2972	0.9740	54
7	0.2269	0.2330	4.2916	0.9739	53
8	0.2272	0.2333	4.2859	0.9738	52
9	0.2275	0.2336	4.2803	0.9738	51
10	0.2278	0.2339	4.2747	0.9737	50
11	0.2281	0.2342	4.2691	0.9736	49
12	0.2284	0.2345	4.2635	0.9736	48
13	0.2286	0.2349	4.2580	0.9735	47
14	0.2289	0.2352	4.2524	0.9734	46
15	0.2292	0.2355	4.2468	0.9734	45
16	0.2295	0.2358	4.2413	0.9733	44
17	0.2298	0.2361	4.2358	0.9732	43
18	0.2300	0.2364	4.2303	0.9732	42
19	0.2303	0.2367	4.2248	0.9731	41
20	0.2306	0.2370	4.2193	0.9730	40
21	0.2309	0.2373	4.2139	0.9730	39
22	0.2312	0.2376	4.2084	0.9729	38
23	0.2315	0.2379	4.2030	0.9728	37
24	0.2317	0.2382	4.1976	0.9728	36
25	0.2320	0.2385	4.1922	0.9727	35
26	0.2323	0.2388	4.1868	0.9726	34
27	0.2326	0.2392	4.1814	0.9726	33
28	0.2329	0.2395	4.1760	0.9725	32
29	0.2332	0.2398	4.1706	0.9724	31
30	0.2334	0.2401	4.1653	0.9724	30
31	0.2337	0.2404	4.1600	0.9723	29
32	0.2340	0.2407	4.1547	0.9722	28
33	0.2343	0.2410	4.1493	0.9722	27
34	0.2346	0.2413	4.1441	0.9721	26
35	0.2349	0.2416	4.1388	0.9720	25
36	0.2351	0.2419	4.1335	0.9720	24
37	0.2354	0.2422	4.1282	0.9719	23
38	0.2357	0.2425	4.1230	0.9718	22
39	0.2360	0.2428	4.1178	0.9718	21
40	0.2363	0.2432	4.1126	0.9717	20
41	0.2366	0.2435	4.1074	0.9716	19
42	0.2368	0.2438	4.1022	0.9715	18
43	0.2371	0.2441	4.0970	0.9715	17
44	0.2374	0.2444	4.0918	0.9714	16
45	0.2377	0.2447	4.0867	0.9713	15
46	0.2380	0.2450	4.0815	0.9713	14
47	0.2383	0.2453	4.0764	0.9712	13
48	0.2385	0.2456	4.0713	0.9711	12
49	0.2388	0.2459	4.0662	0.9711	11
50	0.2391	0.2462	4.0611	0.9710	10
51	0.2394	0.2465	4.0560	0.9709	9
52	0.2397	0.2469	4.0509	0.9709	8
53	0.2399	0.2472	4.0459	0.9708	7
54	0.2402	0.2475	4.0408	0.9707	6
55	0.2405	0.2478	4.0358	0.9706	5
56	0.2408	0.2481	4.0308	0.9706	4
57	0.2411	0.2484	4.0257	0.9705	3
58	0.2414	0.2487	4.0207	0.9704	2
59	0.2416	0.2490	4.0158	0.9704	1
60	0.2419	0.2493	4.0108	0.9703	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.2419	0.2493	4.0108	0.9703	60
1	0.2422	0.2496	4.0058	0.9702	59
2	0.2425	0.2499	4.0009	0.9702	58
3	0.2428	0.2503	3.9959	0.9701	57
4	0.2431	0.2506	3.9910	0.9700	56
5	0.2433	0.2509	3.9861	0.9699	55
6	0.2436	0.2512	3.9812	0.9699	54
7	0.2439	0.2515	3.9763	0.9698	53
8	0.2442	0.2518	3.9714	0.9697	52
9	0.2445	0.2521	3.9665	0.9697	51
10	0.2447	0.2524	3.9617	0.9696	50
11	0.2450	0.2527	3.9568	0.9695	49
12	0.2453	0.2530	3.9520	0.9694	48
13	0.2456	0.2533	3.9471	0.9694	47
14	0.2459	0.2537	3.9423	0.9693	46
15	0.2462	0.2540	3.9375	0.9692	45
16	0.2464	0.2543	3.9327	0.9692	44
17	0.2467	0.2546	3.9279	0.9691	43
18	0.2470	0.2549	3.9232	0.9690	42
19	0.2473	0.2552	3.9184	0.9689	41
20	0.2476	0.2555	3.9136	0.9689	40
21	0.2478	0.2558	3.9089	0.9688	39
22	0.2481	0.2561	3.9042	0.9687	38
23	0.2484	0.2564	3.8995	0.9687	37
24	0.2487	0.2568	3.8947	0.9686	36
25	0.2490	0.2571	3.8900	0.9685	35
26	0.2493	0.2574	3.8854	0.9684	34
27	0.2495	0.2577	3.8807	0.9684	33
28	0.2498	0.2580	3.8760	0.9683	32
29	0.2501	0.2583	3.8714	0.9682	31
30	0.2504	0.2586	3.8667	0.9681	30
31	0.2507	0.2589	3.8621	0.9681	29
32	0.2509	0.2592	3.8575	0.9680	28
33	0.2512	0.2595	3.8528	0.9679	27
34	0.2515	0.2599	3.8482	0.9679	26
35	0.2518	0.2602	3.8436	0.9678	25
36	0.2521	0.2605	3.8391	0.9677	24
37	0.2524	0.2608	3.8345	0.9676	23
38	0.2526	0.2611	3.8299	0.9676	22
39	0.2529	0.2614	3.8254	0.9675	21
40	0.2532	0.2617	3.8208	0.9674	20
41	0.2535	0.2620	3.8163	0.9673	19
42	0.2538	0.2623	3.8118	0.9673	18
43	0.2540	0.2627	3.8073	0.9672	17
44	0.2543	0.2630	3.8028	0.9671	16
45	0.2546	0.2633	3.7983	0.9670	15
46	0.2549	0.2636	3.7938	0.9670	14
47	0.2552	0.2639	3.7893	0.9669	13
48	0.2554	0.2642	3.7848	0.9668	12
49	0.2557	0.2645	3.7804	0.9667	11
50	0.2560	0.2648	3.7760	0.9667	10
51	0.2563	0.2651	3.7715	0.9666	9
52	0.2566	0.2655	3.7671	0.9665	8
53	0.2569	0.2658	3.7627	0.9665	7
54	0.2571	0.2661	3.7583	0.9664	6
55	0.2574	0.2664	3.7539	0.9663	5
56	0.2577	0.2667	3.7495	0.9662	4
57	0.2580	0.2670	3.7451	0.9662	3
58	0.2583	0.2673	3.7408	0.9661	2
59	0.2585	0.2676	3.7364	0.9660	1
60	0.2588	0.2679	3.7321	0.9659	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.2588	0.2679	3.7321	0.9659	60
1	0.2591	0.2683	3.7277	0.9659	59
2	0.2594	0.2686	3.7234	0.9658	58
3	0.2597	0.2689	3.7191	0.9657	57
4	0.2599	0.2692	3.7148	0.9656	56
5	0.2602	0.2695	3.7105	0.9655	55
6	0.2605	0.2698	3.7062	0.9655	54
7	0.2608	0.2701	3.7019	0.9654	53
8	0.2611	0.2704	3.6976	0.9653	52
9	0.2613	0.2708	3.6933	0.9652	51
10	0.2616	0.2711	3.6891	0.9652	50
11	0.2619	0.2714	3.6848	0.9651	49
12	0.2622	0.2717	3.6806	0.9650	48
13	0.2625	0.2720	3.6764	0.9649	47
14	0.2628	0.2723	3.6722	0.9649	46
15	0.2630	0.2726	3.6680	0.9648	45
16	0.2633	0.2729	3.6638	0.9647	44
17	0.2636	0.2733	3.6596	0.9646	43
18	0.2639	0.2736	3.6554	0.9646	42
19	0.2642	0.2739	3.6512	0.9645	41
20	0.2644	0.2742	3.6470	0.9644	40
21	0.2647	0.2745	3.6429	0.9643	39
22	0.2650	0.2748	3.6387	0.9642	38
23	0.2653	0.2751	3.6346	0.9642	37
24	0.2656	0.2754	3.6305	0.9641	36
25	0.2658	0.2758	3.6264	0.9640	35
26	0.2661	0.2761	3.6222	0.9639	34
27	0.2664	0.2764	3.6181	0.9639	33
28	0.2667	0.2767	3.6140	0.9638	32
29	0.2670	0.2770	3.6100	0.9637	31
30	0.2672	0.2773	3.6059	0.9636	30
31	0.2675	0.2776	3.6018	0.9636	29
32	0.2678	0.2780	3.5978	0.9635	28
33	0.2681	0.2783	3.5937	0.9634	27
34	0.2684	0.2786	3.5897	0.9633	26
35	0.2686	0.2789	3.5856	0.9632	25
36	0.2689	0.2792	3.5816	0.9632	24
37	0.2692	0.2795	3.5776	0.9631	23
38	0.2695	0.2798	3.5736	0.9630	22
39	0.2698	0.2801	3.5696	0.9629	21
40	0.2700	0.2805	3.5656	0.9628	20
41	0.2703	0.2808	3.5616	0.9628	19
42	0.2706	0.2811	3.5576	0.9627	18
43	0.2709	0.2814	3.5536	0.9626	17
44	0.2712	0.2817	3.5497	0.9625	16
45	0.2714	0.2820	3.5457	0.9625	15
46	0.2717	0.2823	3.5418	0.9624	14
47	0.2720	0.2827	3.5379	0.9623	13
48	0.2723	0.2830	3.5339	0.9622	12
49	0.2726	0.2833	3.5300	0.9621	11
50	0.2728	0.2836	3.5261	0.9621	10
51	0.2731	0.2839	3.5222	0.9620	9
52	0.2734	0.2842	3.5183	0.9619	8
53	0.2737	0.2845	3.5144	0.9618	7
54	0.2740	0.2849	3.5105	0.9617	6
55	0.2742	0.2852	3.5067	0.9617	5
56	0.2745	0.2855	3.5028	0.9616	4
57	0.2748	0.2858	3.4989	0.9615	3
58	0.2751	0.2861	3.4951	0.9614	2
59	0.2754	0.2864	3.4912	0.9613	1
60	0.2756	0.2867	3.4874	0.9613	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.2756	0.2867	3.4874	0.9613	60
1	0.2759	0.2871	3.4836	0.9612	59
2	0.2762	0.2874	3.4798	0.9611	58
3	0.2765	0.2877	3.4760	0.9610	57
4	0.2768	0.2880	3.4722	0.9609	56
5	0.2770	0.2883	3.4684	0.9609	55
6	0.2773	0.2886	3.4646	0.9608	54
7	0.2776	0.2890	3.4608	0.9607	53
8	0.2779	0.2893	3.4570	0.9606	52
9	0.2782	0.2896	3.4533	0.9605	51
10	0.2784	0.2899	3.4495	0.9605	50
11	0.2787	0.2902	3.4458	0.9604	49
12	0.2790	0.2905	3.4420	0.9603	48
13	0.2793	0.2908	3.4383	0.9602	47
14	0.2795	0.2912	3.4346	0.9601	46
15	0.2798	0.2915	3.4308	0.9600	45
16	0.2801	0.2918	3.4271	0.9600	44
17	0.2804	0.2921	3.4234	0.9599	43
18	0.2807	0.2924	3.4197	0.9598	42
19	0.2809	0.2927	3.4160	0.9597	41
20	0.2812	0.2931	3.4124	0.9596	40
21	0.2815	0.2934	3.4087	0.9596	39
22	0.2818	0.2937	3.4050	0.9595	38
23	0.2821	0.2940	3.4014	0.9594	37
24	0.2823	0.2943	3.3977	0.9593	36
25	0.2826	0.2946	3.3941	0.9592	35
26	0.2829	0.2949	3.3904	0.9591	34
27	0.2832	0.2953	3.3868	0.9591	33
28	0.2835	0.2956	3.3832	0.9590	32
29	0.2837	0.2959	3.3796	0.9589	31
30	0.2840	0.2962	3.3759	0.9588	30
31	0.2843	0.2965	3.3723	0.9587	29
32	0.2846	0.2968	3.3687	0.9587	28
33	0.2849	0.2972	3.3652	0.9586	27
34	0.2851	0.2975	3.3616	0.9585	26
35	0.2854	0.2978	3.3580	0.9584	25
36	0.2857	0.2981	3.3544	0.9583	24
37	0.2860	0.2984	3.3509	0.9582	23
38	0.2862	0.2987	3.3473	0.9582	22
39	0.2865	0.2991	3.3438	0.9581	21
40	0.2868	0.2994	3.3402	0.9580	20
41	0.2871	0.2997	3.3367	0.9579	19
42	0.2874	0.3000	3.3332	0.9578	18
43	0.2876	0.3003	3.3297	0.9577	17
44	0.2879	0.3006	3.3261	0.9577	16
45	0.2882	0.3010	3.3226	0.9576	15
46	0.2885	0.3013	3.3191	0.9575	14
47	0.2888	0.3016	3.3156	0.9574	13
48	0.2890	0.3019	3.3122	0.9573	12
49	0.2893	0.3022	3.3087	0.9572	11
50	0.2896	0.3026	3.3052	0.9572	10
51	0.2899	0.3029	3.3017	0.9571	9
52	0.2901	0.3032	3.2983	0.9570	8
53	0.2904	0.3035	3.2948	0.9569	7
54	0.2907	0.3038	3.2914	0.9568	6
55	0.2910	0.3041	3.2879	0.9567	5
56	0.2913	0.3045	3.2845	0.9566	4
57	0.2915	0.3048	3.2811	0.9566	3
58	0.2918	0.3051	3.2777	0.9565	2
59	0.2921	0.3054	3.2743	0.9564	1
60	0.2924	0.3057	3.2709	0.9563	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.2924	0.3057	3.2709	0.9563	60
1	0.2926	0.3060	3.2675	0.9562	59
2	0.2929	0.3064	3.2641	0.9561	58
3	0.2932	0.3067	3.2607	0.9560	57
4	0.2935	0.3070	3.2573	0.9560	56
5	0.2938	0.3073	3.2539	0.9559	55
6	0.2940	0.3076	3.2506	0.9558	54
7	0.2943	0.3080	3.2472	0.9557	53
8	0.2946	0.3083	3.2438	0.9556	52
9	0.2949	0.3086	3.2405	0.9555	51
10	0.2952	0.3089	3.2371	0.9555	50
11	0.2954	0.3092	3.2338	0.9554	49
12	0.2957	0.3096	3.2305	0.9553	48
13	0.2960	0.3099	3.2272	0.9552	47
14	0.2963	0.3102	3.2238	0.9551	46
15	0.2965	0.3105	3.2205	0.9550	45
16	0.2968	0.3108	3.2172	0.9549	44
17	0.2971	0.3111	3.2139	0.9548	43
18	0.2974	0.3115	3.2106	0.9548	42
19	0.2977	0.3118	3.2073	0.9547	41
20	0.2979	0.3121	3.2041	0.9546	40
21	0.2982	0.3124	3.2008	0.9545	39
22	0.2985	0.3127	3.1975	0.9544	38
23	0.2988	0.3131	3.1943	0.9543	37
24	0.2990	0.3134	3.1910	0.9542	36
25	0.2993	0.3137	3.1878	0.9542	35
26	0.2996	0.3140	3.1845	0.9541	34
27	0.2999	0.3143	3.1813	0.9540	33
28	0.3002	0.3147	3.1780	0.9539	32
29	0.3004	0.3150	3.1748	0.9538	31
30	0.3007	0.3153	3.1716	0.9537	30
31	0.3010	0.3156	3.1684	0.9536	29
32	0.3013	0.3159	3.1652	0.9535	28
33	0.3015	0.3163	3.1620	0.9535	27
34	0.3018	0.3166	3.1588	0.9534	26
35	0.3021	0.3169	3.1556	0.9533	25
36	0.3024	0.3172	3.1524	0.9532	24
37	0.3026	0.3175	3.1492	0.9531	23
38	0.3029	0.3179	3.1460	0.9530	22
39	0.3032	0.3182	3.1429	0.9529	21
40	0.3035	0.3185	3.1397	0.9528	20
41	0.3038	0.3188	3.1366	0.9527	19
42	0.3040	0.3191	3.1334	0.9527	18
43	0.3043	0.3195	3.1303	0.9526	17
44	0.3046	0.3198	3.1271	0.9525	16
45	0.3049	0.3201	3.1240	0.9524	15
46	0.3051	0.3204	3.1209	0.9523	14
47	0.3054	0.3207	3.1178	0.9522	13
48	0.3057	0.3211	3.1146	0.9521	12
49	0.3060	0.3214	3.1115	0.9520	11
50	0.3062	0.3217	3.1084	0.9520	10
51	0.3065	0.3220	3.1053	0.9519	9
52	0.3068	0.3223	3.1022	0.9518	8
53	0.3071	0.3227	3.0991	0.9517	7
54	0.3074	0.3230	3.0961	0.9516	6
55	0.3076	0.3233	3.0930	0.9515	5
56	0.3079	0.3236	3.0899	0.9514	4
57	0.3082	0.3240	3.0868	0.9513	3
58	0.3085	0.3243	3.0838	0.9512	2
59	0.3087	0.3246	3.0807	0.9511	1
60	0.3090	0.3249	3.0777	0.9511	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.3090	0.3240	3.0777	0.9511	60
1	0.3093	0.3252	3.0746	0.9510	59
2	0.3096	0.3256	3.0716	0.9509	58
3	0.3098	0.3259	3.0686	0.9508	57
4	0.3101	0.3262	3.0655	0.9507	56
5	0.3104	0.3265	3.0625	0.9506	55
6	0.3107	0.3269	3.0595	0.9505	54
7	0.3110	0.3272	3.0565	0.9504	53
8	0.3112	0.3275	3.0535	0.9503	52
9	0.3115	0.3278	3.0505	0.9502	51
10	0.3118	0.3281	3.0475	0.9502	50
11	0.3121	0.3285	3.0445	0.9501	49
12	0.3123	0.3288	3.0415	0.9500	48
13	0.3126	0.3291	3.0385	0.9499	47
14	0.3129	0.3294	3.0356	0.9498	46
15	0.3132	0.3298	3.0326	0.9497	45
16	0.3134	0.3301	3.0296	0.9496	44
17	0.3137	0.3304	3.0267	0.9495	43
18	0.3140	0.3307	3.0237	0.9494	42
19	0.3143	0.3310	3.0208	0.9493	41
20	0.3145	0.3314	3.0178	0.9492	40
21	0.3148	0.3317	3.0149	0.9492	39
22	0.3151	0.3320	3.0120	0.9491	38
23	0.3154	0.3323	3.0090	0.9490	37
24	0.3156	0.3327	3.0061	0.9489	36
25	0.3159	0.3330	3.0032	0.9488	35
26	0.3162	0.3333	3.0003	0.9487	34
27	0.3165	0.3336	2.9974	0.9486	33
28	0.3168	0.3339	2.9945	0.9485	32
29	0.3170	0.3343	2.9916	0.9484	31
30	0.3173	0.3346	2.9887	0.9483	30
31	0.3176	0.3349	2.9858	0.9482	29
32	0.3179	0.3352	2.9829	0.9481	28
33	0.3181	0.3356	2.9800	0.9480	27
34	0.3184	0.3359	2.9772	0.9480	26
35	0.3187	0.3362	2.9743	0.9479	25
36	0.3190	0.3365	2.9714	0.9478	24
37	0.3192	0.3369	2.9680	0.9477	23
38	0.3195	0.3372	2.9657	0.9476	22
39	0.3198	0.3375	2.9629	0.9475	21
40	0.3201	0.3378	2.9600	0.9474	20
41	0.3203	0.3382	2.9572	0.9473	19
42	0.3206	0.3385	2.9544	0.9472	18
43	0.3209	0.3388	2.9515	0.9471	17
44	0.3212	0.3391	2.9487	0.9470	16
45	0.3214	0.3395	2.9459	0.9469	15
46	0.3217	0.3398	2.9431	0.9468	14
47	0.3220	0.3401	2.9403	0.9467	13
48	0.3223	0.3404	2.9375	0.9466	12
49	0.3225	0.3408	2.9347	0.9466	11
50	0.3228	0.3411	2.9319	0.9465	10
51	0.3231	0.3414	2.9291	0.9464	9
52	0.3234	0.3417	2.9263	0.9463	8
53	0.3236	0.3421	2.9235	0.9462	7
54	0.3239	0.3424	2.9208	0.9461	6
55	0.3242	0.3427	2.9180	0.9460	5
56	0.3245	0.3430	2.9152	0.9459	4
57	0.3247	0.3434	2.9125	0.9458	3
58	0.3250	0.3437	2.9097	0.9457	2
59	0.3253	0.3440	2.9070	0.9456	1
60	0.3256	0.3443	2.9042	0.9455	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.3256	0.3443	2.9042	0.9455	60
1	0.3258	0.3447	2.9015	0.9454	59
2	0.3261	0.3450	2.8987	0.9453	58
3	0.3264	0.3453	2.8960	0.9452	57
4	0.3267	0.3456	2.8933	0.9451	56
5	0.3269	0.3460	2.8905	0.9450	55
6	0.3272	0.3463	2.8878	0.9449	54
7	0.3275	0.3466	2.8851	0.9449	53
8	0.3278	0.3469	2.8824	0.9448	52
9	0.3280	0.3473	2.8797	0.9447	51
10	0.3283	0.3476	2.8770	0.9446	50
11	0.3286	0.3479	2.8743	0.9445	49
12	0.3289	0.3482	2.8716	0.9444	48
13	0.3291	0.3486	2.8689	0.9443	47
14	0.3294	0.3489	2.8662	0.9442	46
15	0.3297	0.3492	2.8636	0.9441	45
16	0.3300	0.3495	2.8609	0.9440	44
17	0.3302	0.3499	2.8582	0.9439	43
18	0.3305	0.3502	2.8556	0.9438	42
19	0.3308	0.3505	2.8529	0.9437	41
20	0.3311	0.3508	2.8502	0.9436	40
21	0.3313	0.3512	2.8476	0.9435	39
22	0.3316	0.3515	2.8449	0.9434	38
23	0.3319	0.3518	2.8423	0.9433	37
24	0.3322	0.3522	2.8397	0.9432	36
25	0.3324	0.3525	2.8370	0.9431	35
26	0.3327	0.3528	2.8344	0.9430	34
27	0.3330	0.3531	2.8318	0.9429	33
28	0.3333	0.3535	2.8291	0.9428	32
29	0.3335	0.3538	2.8265	0.9427	31
30	0.3338	0.3541	2.8239	0.9426	30
31	0.3341	0.3544	2.8213	0.9425	29
32	0.3344	0.3548	2.8187	0.9424	28
33	0.3346	0.3551	2.8161	0.9423	27
34	0.3349	0.3554	2.8135	0.9423	26
35	0.3352	0.3558	2.8109	0.9422	25
36	0.3355	0.3561	2.8083	0.9421	24
37	0.3357	0.3564	2.8057	0.9420	23
38	0.3360	0.3567	2.8032	0.9419	22
39	0.3363	0.3571	2.8006	0.9418	21
40	0.3365	0.3574	2.7980	0.9417	20
41	0.3368	0.3577	2.7955	0.9416	19
42	0.3371	0.3581	2.7929	0.9415	18
43	0.3374	0.3584	2.7903	0.9414	17
44	0.3376	0.3587	2.7878	0.9413	16
45	0.3379	0.3590	2.7852	0.9412	15
46	0.3382	0.3594	2.7827	0.9411	14
47	0.3385	0.3597	2.7801	0.9410	13
48	0.3387	0.3600	2.7776	0.9409	12
49	0.3390	0.3604	2.7751	0.9408	11
50	0.3393	0.3607	2.7725	0.9407	10
51	0.3396	0.3610	2.7700	0.9406	9
52	0.3398	0.3613	2.7675	0.9405	8
53	0.3401	0.3617	2.7650	0.9404	7
54	0.3404	0.3620	2.7625	0.9403	6
55	0.3407	0.3623	2.7600	0.9402	5
56	0.3409	0.3627	2.7575	0.9401	4
57	0.3412	0.3630	2.7550	0.9400	3
58	0.3415	0.3633	2.7525	0.9399	2
59	0.3417	0.3636	2.7500	0.9398	1
60	0.3420	0.3640	2.7475	0.9397	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.3420	0.3640	2.7475	0.9397	60
1	0.3423	0.3643	2.7450	0.9396	59
2	0.3426	0.3646	2.7425	0.9395	58
3	0.3428	0.3650	2.7400	0.9394	57
4	0.3431	0.3653	2.7376	0.9393	56
5	0.3434	0.3656	2.7351	0.9392	55
6	0.3437	0.3659	2.7326	0.9391	54
7	0.3439	0.3663	2.7302	0.9390	53
8	0.3442	0.3666	2.7277	0.9389	52
9	0.3445	0.3669	2.7253	0.9388	51
10	0.3448	0.3673	2.7228	0.9387	50
11	0.3450	0.3676	2.7204	0.9386	49
12	0.3453	0.3679	2.7179	0.9385	48
13	0.3456	0.3683	2.7155	0.9384	47
14	0.3458	0.3686	2.7130	0.9383	46
15	0.3461	0.3689	2.7106	0.9382	45
16	0.3464	0.3693	2.7082	0.9381	44
17	0.3467	0.3696	2.7058	0.9380	43
18	0.3469	0.3699	2.7034	0.9379	42
19	0.3472	0.3702	2.7009	0.9378	41
20	0.3475	0.3706	2.6985	0.9377	40
21	0.3478	0.3709	2.6961	0.9376	39
22	0.3480	0.3712	2.6937	0.9375	38
23	0.3483	0.3716	2.6913	0.9374	37
24	0.3486	0.3719	2.6889	0.9373	36
25	0.3488	0.3722	2.6865	0.9372	35
26	0.3491	0.3726	2.6841	0.9371	34
27	0.3494	0.3729	2.6818	0.9370	33
28	0.3497	0.3732	2.6794	0.9369	32
29	0.3499	0.3736	2.6770	0.9368	31
30	0.3502	0.3739	2.6746	0.9367	30
31	0.3505	0.3742	2.6723	0.9366	29
32	0.3508	0.3745	2.6699	0.9365	28
33	0.3510	0.3749	2.6675	0.9364	27
34	0.3513	0.3752	2.6652	0.9363	26
35	0.3516	0.3755	2.6628	0.9362	25
36	0.3518	0.3759	2.6605	0.9361	24
37	0.3521	0.3762	2.6581	0.9360	23
38	0.3524	0.3765	2.6558	0.9359	22
39	0.3527	0.3769	2.6534	0.9358	21
40	0.3529	0.3772	2.6511	0.9356	20
41	0.3532	0.3775	2.6488	0.9355	19
42	0.3535	0.3779	2.6464	0.9354	18
43	0.3537	0.3782	2.6441	0.9353	17
44	0.3540	0.3785	2.6418	0.9352	16
45	0.3543	0.3789	2.6395	0.9351	15
46	0.3546	0.3792	2.6371	0.9350	14
47	0.3548	0.3795	2.6348	0.9349	13
48	0.3551	0.3799	2.6325	0.9348	12
49	0.3554	0.3802	2.6302	0.9347	11
50	0.3557	0.3805	2.6279	0.9346	10
51	0.3559	0.3809	2.6256	0.9345	9
52	0.3562	0.3812	2.6233	0.9344	8
53	0.3565	0.3815	2.6210	0.9343	7
54	0.3567	0.3819	2.6187	0.9342	6
55	0.3570	0.3822	2.6165	0.9341	5
56	0.3573	0.3825	2.6142	0.9340	4
57	0.3576	0.3829	2.6119	0.9339	3
58	0.3578	0.3832	2.6096	0.9338	2
59	0.3581	0.3835	2.6074	0.9337	1
60	0.3584	0.3839	2.6051	0.9336	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.3584	0.3839	2.6051	0.9336	60
1	0.3586	0.3842	2.6028	0.9335	59
2	0.3589	0.3845	2.6006	0.9334	58
3	0.3592	0.3849	2.5983	0.9333	57
4	0.3595	0.3852	2.5961	0.9332	56
5	0.3597	0.3855	2.5938	0.9331	55
6	0.3600	0.3859	2.5916	0.9330	54
7	0.3603	0.3862	2.5893	0.9328	53
8	0.3605	0.3865	2.5871	0.9327	52
9	0.3608	0.3869	2.5848	0.9326	51
10	0.3611	0.3872	2.5826	0.9325	50
11	0.3614	0.3875	2.5804	0.9324	49
12	0.3616	0.3879	2.5782	0.9323	48
13	0.3619	0.3882	2.5759	0.9322	47
14	0.3622	0.3885	2.5737	0.9321	46
15	0.3624	0.3889	2.5715	0.9320	45
16	0.3627	0.3892	2.5693	0.9319	44
17	0.3630	0.3895	2.5671	0.9318	43
18	0.3633	0.3899	2.5649	0.9317	42
19	0.3635	0.3902	2.5627	0.9316	41
20	0.3638	0.3906	2.5605	0.9315	40
21	0.3641	0.3909	2.5583	0.9314	39
22	0.3643	0.3912	2.5561	0.9313	38
23	0.3646	0.3916	2.5539	0.9312	37
24	0.3649	0.3919	2.5517	0.9311	36
25	0.3651	0.3922	2.5495	0.9309	35
26	0.3654	0.3926	2.5473	0.9308	34
27	0.3657	0.3929	2.5452	0.9307	33
28	0.3660	0.3932	2.5430	0.9306	32
29	0.3662	0.3936	2.5408	0.9305	31
30	0.3665	0.3939	2.5386	0.9304	30
31	0.3668	0.3942	2.5365	0.9303	29
32	0.3670	0.3946	2.5343	0.9302	28
33	0.3673	0.3949	2.5322	0.9301	27
34	0.3676	0.3953	2.5300	0.9300	26
35	0.3679	0.3956	2.5279	0.9299	25
36	0.3681	0.3959	2.5257	0.9298	24
37	0.3684	0.3963	2.5236	0.9297	23
38	0.3687	0.3966	2.5214	0.9296	22
39	0.3689	0.3969	2.5193	0.9295	21
40	0.3692	0.3973	2.5172	0.9293	20
41	0.3695	0.3976	2.5150	0.9292	19
42	0.3697	0.3979	2.5129	0.9291	18
43	0.3700	0.3983	2.5108	0.9290	17
44	0.3703	0.3986	2.5086	0.9289	16
45	0.3706	0.3990	2.5065	0.9288	15
46	0.3708	0.3993	2.5044	0.9287	14
47	0.3711	0.3996	2.5023	0.9286	13
48	0.3714	0.4000	2.5002	0.9285	12
49	0.3716	0.4003	2.4981	0.9284	11
50	0.3719	0.4006	2.4960	0.9283	10
51	0.3722	0.4010	2.4939	0.9282	9
52	0.3724	0.4013	2.4918	0.9281	8
53	0.3727	0.4017	2.4897	0.9279	7
54	0.3730	0.4020	2.4876	0.9278	6
55	0.3733	0.4023	2.4855	0.9277	5
56	0.3735	0.4027	2.4834	0.9276	4
57	0.3738	0.4030	2.4813	0.9275	3
58	0.3741	0.4033	2.4792	0.9274	2
59	0.3743	0.4037	2.4772	0.9273	1
60	0.3746	0.4040	2.4751	0.9272	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.3746	0.4040	2.4751	0.9272	60
1	0.3749	0.4044	2.4730	0.9271	59
2	0.3751	0.4047	2.4709	0.9270	58
3	0.3754	0.4050	2.4689	0.9269	57
4	0.3757	0.4054	2.4668	0.9267	56
5	0.3760	0.4057	2.4648	0.9266	55
6	0.3762	0.4061	2.4627	0.9265	54
7	0.3765	0.4064	2.4606	0.9264	53
8	0.3768	0.4067	2.4586	0.9263	52
9	0.3770	0.4071	2.4566	0.9262	51
10	0.3773	0.4074	2.4545	0.9261	50
11	0.3776	0.4078	2.4525	0.9260	49
12	0.3778	0.4081	2.4504	0.9259	48
13	0.3781	0.4084	2.4484	0.9258	47
14	0.3784	0.4088	2.4464	0.9257	46
15	0.3786	0.4091	2.4443	0.9255	45
16	0.3789	0.4095	2.4423	0.9254	44
17	0.3792	0.4098	2.4403	0.9253	43
18	0.3795	0.4101	2.4383	0.9252	42
19	0.3797	0.4105	2.4362	0.9251	41
20	0.3800	0.4108	2.4342	0.9250	40
21	0.3803	0.4111	2.4322	0.9249	39
22	0.3805	0.4115	2.4302	0.9248	38
23	0.3808	0.4118	2.4282	0.9247	37
24	0.3811	0.4122	2.4262	0.9245	36
25	0.3813	0.4125	2.4242	0.9244	35
26	0.3816	0.4129	2.4222	0.9243	34
27	0.3819	0.4132	2.4202	0.9242	33
28	0.3821	0.4135	2.4182	0.9241	32
29	0.3824	0.4139	2.4162	0.9240	31
30	0.3827	0.4142	2.4142	0.9239	30
31	0.3830	0.4146	2.4122	0.9238	29
32	0.3832	0.4149	2.4102	0.9237	28
33	0.3835	0.4152	2.4083	0.9235	27
34	0.3838	0.4156	2.4063	0.9234	26
35	0.3840	0.4159	2.4043	0.9233	25
36	0.3843	0.4163	2.4023	0.9232	24
37	0.3846	0.4166	2.4004	0.9231	23
38	0.3848	0.4169	2.3984	0.9230	22
39	0.3851	0.4173	2.3964	0.9229	21
40	0.3854	0.4176	2.3945	0.9228	20
41	0.3856	0.4180	2.3925	0.9227	19
42	0.3859	0.4183	2.3906	0.9225	18
43	0.3862	0.4187	2.3886	0.9224	17
44	0.3864	0.4190	2.3867	0.9223	16
45	0.3867	0.4193	2.3847	0.9222	15
46	0.3870	0.4197	2.3828	0.9221	14
47	0.3872	0.4200	2.3808	0.9220	13
48	0.3875	0.4204	2.3789	0.9219	12
49	0.3878	0.4207	2.3770	0.9218	11
50	0.3881	0.4210	2.3750	0.9216	10
51	0.3883	0.4214	2.3731	0.9215	9
52	0.3886	0.4217	2.3712	0.9214	8
53	0.3889	0.4221	2.3693	0.9213	7
54	0.3891	0.4224	2.3673	0.9212	6
55	0.3894	0.4228	2.3654	0.9211	5
56	0.3897	0.4231	2.3635	0.9210	4
57	0.3899	0.4234	2.3616	0.9208	3
58	0.3902	0.4238	2.3597	0.9207	2
59	0.3905	0.4241	2.3578	0.9206	1
60	0.3907	0.4245	2.3559	0.9205	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.3907	0.4245	2.3559	0.9205	60
1	0.3910	0.4248	2.3539	0.9204	59
2	0.3913	0.4252	2.3520	0.9203	58
3	0.3915	0.4255	2.3501	0.9202	57
4	0.3918	0.4258	2.3483	0.9200	56
5	0.3921	0.4262	2.3464	0.9199	55
6	0.3923	0.4265	2.3445	0.9198	54
7	0.3926	0.4269	2.3426	0.9197	53
8	0.3929	0.4272	2.3407	0.9196	52
9	0.3931	0.4276	2.3388	0.9195	51
10	0.3934	0.4279	2.3369	0.9194	50
11	0.3937	0.4283	2.3351	0.9192	49
12	0.3939	0.4286	2.3332	0.9191	48
13	0.3942	0.4289	2.3313	0.9190	47
14	0.3945	0.4293	2.3294	0.9189	46
15	0.3947	0.4296	2.3276	0.9188	45
16	0.3950	0.4300	2.3257	0.9187	44
17	0.3953	0.4303	2.3238	0.9186	43
18	0.3955	0.4307	2.3220	0.9184	42
19	0.3958	0.4310	2.3201	0.9183	41
20	0.3961	0.4314	2.3183	0.9182	40
21	0.3963	0.4317	2.3164	0.9181	39
22	0.3966	0.4320	2.3146	0.9180	38
23	0.3969	0.4324	2.3127	0.9179	37
24	0.3971	0.4327	2.3109	0.9178	36
25	0.3974	0.4331	2.3090	0.9176	35
26	0.3977	0.4334	2.3072	0.9175	34
27	0.3979	0.4338	2.3053	0.9174	33
28	0.3982	0.4341	2.3035	0.9173	32
29	0.3985	0.4345	2.3017	0.9172	31
30	0.3987	0.4348	2.2998	0.9171	30
31	0.3990	0.4352	2.2980	0.9169	29
32	0.3993	0.4355	2.2962	0.9168	28
33	0.3995	0.4359	2.2944	0.9167	27
34	0.3998	0.4362	2.2925	0.9166	26
35	0.4001	0.4365	2.2907	0.9165	25
36	0.4003	0.4369	2.2889	0.9164	24
37	0.4006	0.4372	2.2871	0.9162	23
38	0.4009	0.4376	2.2853	0.9161	22
39	0.4011	0.4379	2.2835	0.9160	21
40	0.4014	0.4383	2.2817	0.9159	20
41	0.4017	0.4386	2.2799	0.9158	19
42	0.4019	0.4390	2.2781	0.9157	18
43	0.4022	0.4393	2.2763	0.9155	17
44	0.4025	0.4397	2.2745	0.9154	16
45	0.4027	0.4400	2.2727	0.9153	15
46	0.4030	0.4404	2.2709	0.9152	14
47	0.4033	0.4407	2.2691	0.9151	13
48	0.4035	0.4411	2.2673	0.9150	12
49	0.4038	0.4414	2.2655	0.9148	11
50	0.4041	0.4417	2.2637	0.9147	10
51	0.4043	0.4421	2.2620	0.9146	9
52	0.4046	0.4424	2.2602	0.9145	8
53	0.4049	0.4428	2.2584	0.9144	7
54	0.4051	0.4431	2.2566	0.9143	6
55	0.4054	0.4435	2.2549	0.9141	5
56	0.4057	0.4438	2.2531	0.9140	4
57	0.4059	0.4442	2.2513	0.9139	3
58	0.4062	0.4445	2.2496	0.9138	2
59	0.4065	0.4449	2.2478	0.9137	1
60	0.4067	0.4452	2.2460	0.9135	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.4067	0.4452	2.2460	0.9135	60
1	0.4070	0.4456	2.2443	0.9134	59
2	0.4073	0.4459	2.2425	0.9133	58
3	0.4075	0.4463	2.2408	0.9132	57
4	0.4078	0.4466	2.2390	0.9131	56
5	0.4081	0.4470	2.2373	0.9130	55
6	0.4083	0.4473	2.2355	0.9128	54
7	0.4086	0.4477	2.2338	0.9127	53
8	0.4089	0.4480	2.2320	0.9126	52
9	0.4091	0.4484	2.2303	0.9125	51
10	0.4094	0.4487	2.2286	0.9124	50
11	0.4097	0.4491	2.2268	0.9122	49
12	0.4099	0.4494	2.2251	0.9121	48
13	0.4102	0.4498	2.2234	0.9120	47
14	0.4105	0.4501	2.2216	0.9119	46
15	0.4107	0.4505	2.2199	0.9118	45
16	0.4110	0.4508	2.2182	0.9116	44
17	0.4112	0.4512	2.2165	0.9115	43
18	0.4115	0.4515	2.2148	0.9114	42
19	0.4118	0.4519	2.2130	0.9113	41
20	0.4120	0.4522	2.2113	0.9112	40
21	0.4123	0.4526	2.2096	0.9110	39
22	0.4126	0.4529	2.2079	0.9109	38
23	0.4128	0.4533	2.2062	0.9108	37
24	0.4131	0.4536	2.2045	0.9107	36
25	0.4134	0.4540	2.2028	0.9106	35
26	0.4136	0.4543	2.2011	0.9104	34
27	0.4139	0.4547	2.1994	0.9103	33
28	0.4142	0.4550	2.1977	0.9102	32
29	0.4144	0.4554	2.1960	0.9101	31
30	0.4147	0.4557	2.1943	0.9100	30
31	0.4150	0.4561	2.1926	0.9098	29
32	0.4152	0.4564	2.1909	0.9097	28
33	0.4155	0.4568	2.1892	0.9096	27
34	0.4158	0.4571	2.1876	0.9095	26
35	0.4160	0.4575	2.1859	0.9094	25
36	0.4163	0.4578	2.1842	0.9092	24
37	0.4165	0.4582	2.1825	0.9091	23
38	0.4168	0.4585	2.1808	0.9090	22
39	0.4171	0.4589	2.1792	0.9089	21
40	0.4173	0.4592	2.1775	0.9088	20
41	0.4176	0.4596	2.1758	0.9086	19
42	0.4179	0.4599	2.1742	0.9085	18
43	0.4181	0.4603	2.1725	0.9084	17
44	0.4184	0.4607	2.1708	0.9083	16
45	0.4187	0.4610	2.1692	0.9081	15
46	0.4189	0.4614	2.1675	0.9080	14
47	0.4192	0.4617	2.1659	0.9079	13
48	0.4195	0.4621	2.1642	0.9078	12
49	0.4197	0.4624	2.1625	0.9077	11
50	0.4200	0.4628	2.1609	0.9075	10
51	0.4202	0.4631	2.1592	0.9074	9
52	0.4205	0.4635	2.1576	0.9073	8
53	0.4208	0.4638	2.1560	0.9072	7
54	0.4210	0.4642	2.1543	0.9070	6
55	0.4213	0.4645	2.1527	0.9069	5
56	0.4216	0.4649	2.1510	0.9068	4
57	0.4218	0.4652	2.1494	0.9067	3
58	0.4221	0.4656	2.1478	0.9066	2
59	0.4224	0.4660	2.1461	0.9064	1
60	0.4226	0.4663	2.1445	0.9063	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.4226	0.4663	2.1445	0.9063	60
1	0.4229	0.4667	2.1429	0.9062	59
2	0.4231	0.4670	2.1413	0.9061	58
3	0.4234	0.4674	2.1396	0.9059	57
4	0.4237	0.4677	2.1380	0.9058	56
5	0.4239	0.4681	2.1364	0.9057	55
6	0.4242	0.4684	2.1348	0.9056	54
7	0.4245	0.4688	2.1332	0.9054	53
8	0.4247	0.4691	2.1315	0.9053	52
9	0.4250	0.4695	2.1299	0.9052	51
10	0.4253	0.4699	2.1283	0.9051	50
11	0.4255	0.4702	2.1267	0.9050	49
12	0.4258	0.4706	2.1251	0.9048	48
13	0.4260	0.4709	2.1235	0.9047	47
14	0.4263	0.4713	2.1219	0.9046	46
15	0.4266	0.4716	2.1203	0.9045	45
16	0.4268	0.4720	2.1187	0.9043	44
17	0.4271	0.4723	2.1171	0.9042	43
18	0.4274	0.4727	2.1155	0.9041	42
19	0.4276	0.4731	2.1139	0.9040	41
20	0.4279	0.4734	2.1123	0.9038	40
21	0.4281	0.4738	2.1107	0.9037	39
22	0.4284	0.4741	2.1092	0.9036	38
23	0.4287	0.4745	2.1076	0.9035	37
24	0.4289	0.4748	2.1060	0.9033	36
25	0.4292	0.4752	2.1044	0.9032	35
26	0.4295	0.4755	2.1028	0.9031	34
27	0.4297	0.4759	2.1013	0.9030	33
28	0.4300	0.4763	2.0997	0.9028	32
29	0.4302	0.4766	2.0981	0.9027	31
30	0.4305	0.4770	2.0965	0.9026	30
31	0.4308	0.4773	2.0950	0.9025	29
32	0.4310	0.4777	2.0934	0.9023	28
33	0.4313	0.4780	2.0918	0.9022	27
34	0.4316	0.4784	2.0903	0.9021	26
35	0.4318	0.4788	2.0887	0.9020	25
36	0.4321	0.4791	2.0872	0.9018	24
37	0.4323	0.4795	2.0856	0.9017	23
38	0.4326	0.4798	2.0840	0.9016	22
39	0.4329	0.4802	2.0825	0.9015	21
40	0.4331	0.4806	2.0809	0.9013	20
41	0.4334	0.4809	2.0794	0.9012	19
42	0.4337	0.4813	2.0778	0.9011	18
43	0.4339	0.4816	2.0763	0.9010	17
44	0.4342	0.4820	2.0748	0.9008	16
45	0.4344	0.4823	2.0732	0.9007	15
46	0.4347	0.4827	2.0717	0.9006	14
47	0.4350	0.4831	2.0701	0.9004	13
48	0.4352	0.4834	2.0686	0.9003	12
49	0.4355	0.4838	2.0671	0.9002	11
50	0.4358	0.4841	2.0655	0.9001	10
51	0.4360	0.4845	2.0640	0.8999	9
52	0.4363	0.4849	2.0625	0.8998	8
53	0.4365	0.4852	2.0609	0.8997	7
54	0.4368	0.4856	2.0594	0.8996	6
55	0.4371	0.4859	2.0579	0.8994	5
56	0.4373	0.4863	2.0564	0.8993	4
57	0.4376	0.4867	2.0549	0.8992	3
58	0.4378	0.4870	2.0533	0.8990	2
59	0.4381	0.4874	2.0518	0.8989	1
60	0.4384	0.4877	2.0503	0.8988	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.4384	0.4877	2.0503	0.8988	60
1	0.4386	0.4881	2.0488	0.8987	59
2	0.4389	0.4885	2.0473	0.8985	58
3	0.4392	0.4888	2.0458	0.8984	57
4	0.4394	0.4892	2.0443	0.8983	56
5	0.4397	0.4895	2.0428	0.8982	55
6	0.4399	0.4899	2.0413	0.8980	54
7	0.4402	0.4903	2.0398	0.8979	53
8	0.4405	0.4906	2.0383	0.8978	52
9	0.4407	0.4910	2.0368	0.8976	51
10	0.4410	0.4913	2.0353	0.8975	50
11	0.4412	0.4917	2.0338	0.8974	49
12	0.4415	0.4921	2.0323	0.8973	48
13	0.4418	0.4924	2.0308	0.8971	47
14	0.4420	0.4928	2.0293	0.8970	46
15	0.4423	0.4931	2.0278	0.8969	45
16	0.4425	0.4935	2.0263	0.8967	44
17	0.4428	0.4939	2.0248	0.8966	43
18	0.4431	0.4942	2.0233	0.8965	42
19	0.4433	0.4946	2.0219	0.8964	41
20	0.4436	0.4950	2.0204	0.8962	40
21	0.4439	0.4953	2.0189	0.8961	39
22	0.4441	0.4957	2.0174	0.8960	38
23	0.4444	0.4960	2.0160	0.8958	37
24	0.4446	0.4964	2.0145	0.8957	36
25	0.4449	0.4968	2.0130	0.8956	35
26	0.4452	0.4971	2.0115	0.8955	34
27	0.4454	0.4975	2.0101	0.8953	33
28	0.4457	0.4979	2.0086	0.8952	32
29	0.4459	0.4982	2.0072	0.8951	31
30	0.4462	0.4986	2.0057	0.8949	30
31	0.4465	0.4989	2.0042	0.8948	29
32	0.4467	0.4993	2.0028	0.8947	28
33	0.4470	0.4997	2.0013	0.8945	27
34	0.4472	0.5000	1.9999	0.8944	26
35	0.4475	0.5004	1.9984	0.8943	25
36	0.4478	0.5008	1.9970	0.8942	24
37	0.4480	0.5011	1.9955	0.8940	23
38	0.4483	0.5015	1.9941	0.8939	22
39	0.4485	0.5019	1.9926	0.8938	21
40	0.4488	0.5022	1.9912	0.8936	20
41	0.4491	0.5026	1.9897	0.8935	19
42	0.4493	0.5029	1.9883	0.8934	18
43	0.4496	0.5033	1.9868	0.8932	17
44	0.4498	0.5037	1.9854	0.8931	16
45	0.4501	0.5040	1.9840	0.8930	15
46	0.4504	0.5044	1.9825	0.8928	14
47	0.4506	0.5048	1.9811	0.8927	13
48	0.4509	0.5051	1.9797	0.8926	12
49	0.4511	0.5055	1.9782	0.8925	11
50	0.4514	0.5059	1.9768	0.8923	10
51	0.4517	0.5062	1.9754	0.8922	9
52	0.4519	0.5066	1.9740	0.8921	8
53	0.4522	0.5070	1.9725	0.8919	7
54	0.4524	0.5073	1.9711	0.8918	6
55	0.4527	0.5077	1.9697	0.8917	5
56	0.4530	0.5081	1.9683	0.8915	4
57	0.4532	0.5084	1.9669	0.8914	3
58	0.4535	0.5088	1.9654	0.8913	2
59	0.4537	0.5092	1.9640	0.8911	1
60	0.4540	0.5095	1.9626	0.8910	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.4540	0.5095	1.9626	0.8910	60
1	0.4542	0.5099	1.9612	0.8909	59
2	0.4545	0.5103	1.9598	0.8907	58
3	0.4548	0.5106	1.9584	0.8906	57
4	0.4550	0.5110	1.9570	0.8905	56
5	0.4553	0.5114	1.9556	0.8903	55
6	0.4555	0.5117	1.9542	0.8902	54
7	0.4558	0.5121	1.9528	0.8901	53
8	0.4561	0.5125	1.9514	0.8899	52
9	0.4563	0.5128	1.9500	0.8898	51
10	0.4566	0.5132	1.9486	0.8897	50
11	0.4568	0.5136	1.9472	0.8895	49
12	0.4571	0.5139	1.9458	0.8894	48
13	0.4574	0.5143	1.9444	0.8893	47
14	0.4576	0.5147	1.9430	0.8892	46
15	0.4579	0.5150	1.9416	0.8890	45
16	0.4581	0.5154	1.9402	0.8889	44
17	0.4584	0.5158	1.9388	0.8888	43
18	0.4586	0.5161	1.9375	0.8886	42
19	0.4589	0.5165	1.9361	0.8885	41
20	0.4592	0.5169	1.9347	0.8884	40
21	0.4594	0.5172	1.9333	0.8882	39
22	0.4597	0.5176	1.9319	0.8881	38
23	0.4599	0.5180	1.9306	0.8879	37
24	0.4602	0.5184	1.9292	0.8878	36
25	0.4605	0.5187	1.9278	0.8877	35
26	0.4607	0.5191	1.9265	0.8875	34
27	0.4610	0.5195	1.9251	0.8874	33
28	0.4612	0.5198	1.9237	0.8873	32
29	0.4615	0.5202	1.9223	0.8871	31
30	0.4617	0.5206	1.9210	0.8870	30
31	0.4620	0.5209	1.9196	0.8869	29
32	0.4623	0.5213	1.9183	0.8867	28
33	0.4625	0.5217	1.9169	0.8866	27
34	0.4628	0.5220	1.9155	0.8865	26
35	0.4630	0.5224	1.9142	0.8863	25
36	0.4633	0.5228	1.9128	0.8862	24
37	0.4636	0.5232	1.9115	0.8861	23
38	0.4638	0.5235	1.9101	0.8859	22
39	0.4641	0.5239	1.9088	0.8858	21
40	0.4643	0.5243	1.9074	0.8857	20
41	0.4646	0.5246	1.9061	0.8855	19
42	0.4648	0.5250	1.9047	0.8854	18
43	0.4651	0.5254	1.9034	0.8853	17
44	0.4654	0.5258	1.9020	0.8851	16
45	0.4656	0.5261	1.9007	0.8850	15
46	0.4659	0.5265	1.8993	0.8849	14
47	0.4661	0.5269	1.8980	0.8847	13
48	0.4664	0.5272	1.8967	0.8846	12
49	0.4666	0.5276	1.8953	0.8844	11
50	0.4669	0.5280	1.8940	0.8843	10
51	0.4672	0.5284	1.8927	0.8842	9
52	0.4674	0.5287	1.8913	0.8840	8
53	0.4677	0.5291	1.8900	0.8839	7
54	0.4679	0.5295	1.8887	0.8838	6
55	0.4682	0.5298	1.8873	0.8836	5
56	0.4684	0.5302	1.8860	0.8835	4
57	0.4687	0.5306	1.8847	0.8834	3
58	0.4690	0.5310	1.8834	0.8832	2
59	0.4692	0.5313	1.8820	0.8831	1
60	0.4695	0.5317	1.8807	0.8829	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.4695	0.5317	1.8807	0.8829	60
1	0.4697	0.5321	1.8794	0.8828	59
2	0.4700	0.5325	1.8781	0.8827	58
3	0.4702	0.5328	1.8768	0.8825	57
4	0.4705	0.5332	1.8755	0.8824	56
5	0.4708	0.5336	1.8741	0.8823	55
6	0.4710	0.5340	1.8728	0.8821	54
7	0.4713	0.5343	1.8715	0.8820	53
8	0.4715	0.5347	1.8702	0.8819	52
9	0.4718	0.5351	1.8689	0.8817	51
10	0.4720	0.5354	1.8676	0.8816	50
11	0.4723	0.5358	1.8663	0.8814	49
12	0.4726	0.5362	1.8650	0.8813	48
13	0.4728	0.5366	1.8637	0.8812	47
14	0.4731	0.5369	1.8624	0.8810	46
15	0.4733	0.5373	1.8611	0.8809	45
16	0.4736	0.5377	1.8598	0.8808	44
17	0.4738	0.5381	1.8585	0.8806	43
18	0.4741	0.5384	1.8572	0.8805	42
19	0.4743	0.5388	1.8559	0.8803	41
20	0.4746	0.5392	1.8546	0.8802	40
21	0.4749	0.5396	1.8533	0.8801	39
22	0.4751	0.5399	1.8520	0.8799	38
23	0.4754	0.5403	1.8507	0.8798	37
24	0.4756	0.5407	1.8495	0.8796	36
25	0.4759	0.5411	1.8482	0.8795	35
26	0.4761	0.5415	1.8469	0.8794	34
27	0.4764	0.5418	1.8456	0.8792	33
28	0.4766	0.5422	1.8443	0.8791	32
29	0.4769	0.5426	1.8430	0.8790	31
30	0.4772	0.5430	1.8418	0.8788	30
31	0.4774	0.5433	1.8405	0.8787	29
32	0.4777	0.5437	1.8392	0.8785	28
33	0.4779	0.5441	1.8379	0.8784	27
34	0.4782	0.5445	1.8367	0.8783	26
35	0.4784	0.5448	1.8354	0.8781	25
36	0.4787	0.5452	1.8341	0.8780	24
37	0.4789	0.5456	1.8329	0.8778	23
38	0.4792	0.5460	1.8316	0.8777	22
39	0.4795	0.5464	1.8303	0.8776	21
40	0.4797	0.5467	1.8291	0.8774	20
41	0.4800	0.5471	1.8278	0.8773	19
42	0.4802	0.5475	1.8265	0.8771	18
43	0.4805	0.5479	1.8253	0.8770	17
44	0.4807	0.5482	1.8240	0.8769	16
45	0.4810	0.5486	1.8228	0.8767	15
46	0.4812	0.5490	1.8215	0.8766	14
47	0.4815	0.5494	1.8202	0.8764	13
48	0.4818	0.5498	1.8190	0.8763	12
49	0.4820	0.5501	1.8177	0.8762	11
50	0.4823	0.5505	1.8165	0.8760	10
51	0.4825	0.5509	1.8152	0.8759	9
52	0.4828	0.5513	1.8140	0.8757	8
53	0.4830	0.5517	1.8127	0.8756	7
54	0.4833	0.5520	1.8115	0.8755	6
55	0.4835	0.5524	1.8103	0.8753	5
56	0.4838	0.5528	1.8090	0.8752	4
57	0.4840	0.5532	1.8078	0.8750	3
58	0.4843	0.5535	1.8065	0.8749	2
59	0.4846	0.5539	1.8053	0.8748	1
60	0.4848	0.5543	1.8040	0.8746	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.4848	0.5543	1.8040	0.8746	60
1	0.4851	0.5547	1.8028	0.8745	59
2	0.4853	0.5551	1.8016	0.8743	58
3	0.4856	0.5555	1.8003	0.8742	57
4	0.4858	0.5558	1.7991	0.8741	56
5	0.4861	0.5562	1.7979	0.8739	55
6	0.4863	0.5566	1.7966	0.8738	54
7	0.4866	0.5570	1.7954	0.8736	53
8	0.4868	0.5574	1.7942	0.8735	52
9	0.4871	0.5577	1.7930	0.8733	51
10	0.4874	0.5581	1.7917	0.8732	50
11	0.4876	0.5585	1.7905	0.8731	49
12	0.4879	0.5589	1.7893	0.8729	48
13	0.4881	0.5593	1.7881	0.8728	47
14	0.4884	0.5596	1.7868	0.8726	46
15	0.4886	0.5600	1.7856	0.8725	45
16	0.4889	0.5604	1.7844	0.8724	44
17	0.4891	0.5608	1.7832	0.8722	43
18	0.4894	0.5612	1.7820	0.8721	42
19	0.4896	0.5616	1.7808	0.8719	41
20	0.4899	0.5619	1.7796	0.8718	40
21	0.4901	0.5623	1.7783	0.8716	39
22	0.4904	0.5627	1.7771	0.8715	38
23	0.4907	0.5631	1.7759	0.8714	37
24	0.4909	0.5635	1.7747	0.8712	36
25	0.4912	0.5639	1.7735	0.8711	35
26	0.4914	0.5642	1.7723	0.8709	34
27	0.4917	0.5646	1.7711	0.8708	33
28	0.4919	0.5650	1.7699	0.8706	32
29	0.4922	0.5654	1.7687	0.8705	31
30	0.4924	0.5658	1.7675	0.8704	30
31	0.4927	0.5662	1.7663	0.8702	29
32	0.4929	0.5665	1.7651	0.8701	28
33	0.4932	0.5669	1.7639	0.8699	27
34	0.4934	0.5673	1.7627	0.8698	26
35	0.4937	0.5677	1.7615	0.8696	25
36	0.4939	0.5681	1.7603	0.8695	24
37	0.4942	0.5685	1.7591	0.8694	23
38	0.4944	0.5688	1.7579	0.8692	22
39	0.4947	0.5692	1.7567	0.8691	21
40	0.4950	0.5696	1.7556	0.8689	20
41	0.4952	0.5700	1.7544	0.8688	19
42	0.4955	0.5704	1.7532	0.8686	18
43	0.4957	0.5708	1.7520	0.8685	17
44	0.4960	0.5712	1.7508	0.8683	16
45	0.4962	0.5715	1.7496	0.8682	15
46	0.4965	0.5719	1.7485	0.8681	14
47	0.4967	0.5723	1.7473	0.8679	13
48	0.4970	0.5727	1.7461	0.8678	12
49	0.4972	0.5731	1.7449	0.8676	11
50	0.4975	0.5735	1.7437	0.8675	10
51	0.4977	0.5739	1.7426	0.8673	9
52	0.4980	0.5743	1.7414	0.8672	8
53	0.4982	0.5746	1.7402	0.8670	7
54	0.4985	0.5750	1.7391	0.8669	6
55	0.4987	0.5754	1.7379	0.8668	5
56	0.4990	0.5758	1.7367	0.8666	4
57	0.4992	0.5762	1.7355	0.8665	3
58	0.4995	0.5766	1.7344	0.8663	2
59	0.4997	0.5770	1.7332	0.8662	1
60	0.5000	0.5774	1.7321	0.8660	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.5000	0.5774	1.7321	0.8660	60
1	0.5003	0.5777	1.7309	0.8659	59
2	0.5005	0.5781	1.7297	0.8657	58
3	0.5008	0.5785	1.7286	0.8656	57
4	0.5010	0.5789	1.7274	0.8654	56
5	0.5013	0.5793	1.7262	0.8653	55
6	0.5015	0.5797	1.7251	0.8652	54
7	0.5018	0.5801	1.7239	0.8650	53
8	0.5020	0.5805	1.7228	0.8649	52
9	0.5023	0.5808	1.7216	0.8647	51
10	0.5025	0.5812	1.7205	0.8646	50
11	0.5028	0.5816	1.7193	0.8644	49
12	0.5030	0.5820	1.7182	0.8643	48
13	0.5033	0.5824	1.7170	0.8641	47
14	0.5035	0.5828	1.7159	0.8640	46
15	0.5038	0.5832	1.7147	0.8638	45
16	0.5040	0.5836	1.7136	0.8637	44
17	0.5043	0.5840	1.7124	0.8635	43
18	0.5045	0.5844	1.7113	0.8634	42
19	0.5048	0.5847	1.7102	0.8632	41
20	0.5050	0.5851	1.7090	0.8631	40
21	0.5053	0.5855	1.7079	0.8630	39
22	0.5055	0.5859	1.7067	0.8628	38
23	0.5058	0.5863	1.7056	0.8627	37
24	0.5060	0.5867	1.7045	0.8625	36
25	0.5063	0.5871	1.7033	0.8624	35
26	0.5065	0.5875	1.7022	0.8622	34
27	0.5068	0.5879	1.7011	0.8621	33
28	0.5070	0.5883	1.6999	0.8619	32
29	0.5073	0.5887	1.6988	0.8618	31
30	0.5075	0.5890	1.6977	0.8616	30
31	0.5078	0.5894	1.6965	0.8615	29
32	0.5080	0.5898	1.6954	0.8613	28
33	0.5083	0.5902	1.6943	0.8612	27
34	0.5085	0.5906	1.6932	0.8610	26
35	0.5088	0.5910	1.6920	0.8609	25
36	0.5090	0.5914	1.6909	0.8607	24
37	0.5093	0.5918	1.6898	0.8606	23
38	0.5095	0.5922	1.6887	0.8604	22
39	0.5098	0.5926	1.6875	0.8603	21
40	0.5100	0.5930	1.6864	0.8601	20
41	0.5103	0.5934	1.6853	0.8600	19
42	0.5105	0.5938	1.6842	0.8599	18
43	0.5108	0.5942	1.6831	0.8597	17
44	0.5110	0.5945	1.6820	0.8596	16
45	0.5113	0.5949	1.6808	0.8594	15
46	0.5115	0.5953	1.6797	0.8593	14
47	0.5118	0.5957	1.6786	0.8591	13
48	0.5120	0.5961	1.6775	0.8590	12
49	0.5123	0.5965	1.6764	0.8588	11
50	0.5125	0.5969	1.6753	0.8587	10
51	0.5128	0.5973	1.6742	0.8585	9
52	0.5130	0.5977	1.6731	0.8584	8
53	0.5133	0.5981	1.6720	0.8582	7
54	0.5135	0.5985	1.6709	0.8581	6
55	0.5138	0.5989	1.6698	0.8579	5
56	0.5140	0.5993	1.6687	0.8578	4
57	0.5143	0.5997	1.6676	0.8576	3
58	0.5145	0.6001	1.6665	0.8575	2
59	0.5148	0.6005	1.6654	0.8573	1
60	0.5150	0.6009	1.6643	0.8572	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.5150	0.6009	1.6643	0.8572	60
1	0.5153	0.6013	1.6632	0.8570	59
2	0.5155	0.6017	1.6621	0.8569	58
3	0.5158	0.6020	1.6610	0.8567	57
4	0.5160	0.6024	1.6599	0.8566	56
5	0.5163	0.6028	1.6588	0.8564	55
6	0.5165	0.6032	1.6577	0.8563	54
7	0.5168	0.6036	1.6566	0.8561	53
8	0.5170	0.6040	1.6555	0.8560	52
9	0.5173	0.6044	1.6545	0.8558	51
10	0.5175	0.6048	1.6534	0.8557	50
11	0.5178	0.6052	1.6523	0.8555	49
12	0.5180	0.6056	1.6512	0.8554	48
13	0.5183	0.6060	1.6501	0.8552	47
14	0.5185	0.6064	1.6490	0.8551	46
15	0.5188	0.6068	1.6479	0.8549	45
16	0.5190	0.6072	1.6469	0.8548	44
17	0.5193	0.6076	1.6458	0.8546	43
18	0.5195	0.6080	1.6447	0.8545	42
19	0.5198	0.6084	1.6436	0.8543	41
20	0.5200	0.6088	1.6426	0.8542	40
21	0.5203	0.6092	1.6415	0.8540	39
22	0.5205	0.6096	1.6404	0.8539	38
23	0.5208	0.6100	1.6393	0.8537	37
24	0.5210	0.6104	1.6383	0.8536	36
25	0.5213	0.6108	1.6372	0.8534	35
26	0.5215	0.6112	1.6361	0.8532	34
27	0.5218	0.6116	1.6351	0.8531	33
28	0.5220	0.6120	1.6340	0.8529	32
29	0.5223	0.6124	1.6329	0.8528	31
30	0.5225	0.6128	1.6319	0.8526	30
31	0.5227	0.6132	1.6308	0.8525	29
32	0.5230	0.6136	1.6297	0.8523	28
33	0.5232	0.6140	1.6287	0.8522	27
34	0.5235	0.6144	1.6276	0.8520	26
35	0.5237	0.6148	1.6265	0.8519	25
36	0.5240	0.6152	1.6255	0.8517	24
37	0.5242	0.6156	1.6244	0.8516	23
38	0.5245	0.6160	1.6234	0.8514	22
39	0.5247	0.6164	1.6223	0.8513	21
40	0.5250	0.6168	1.6212	0.8511	20
41	0.5252	0.6172	1.6202	0.8510	19
42	0.5255	0.6176	1.6191	0.8508	18
43	0.5257	0.6180	1.6181	0.8507	17
44	0.5260	0.6184	1.6170	0.8505	16
45	0.5262	0.6188	1.6160	0.8504	15
46	0.5265	0.6192	1.6149	0.8502	14
47	0.5267	0.6196	1.6139	0.8500	13
48	0.5270	0.6200	1.6128	0.8499	12
49	0.5272	0.6204	1.6118	0.8497	11
50	0.5275	0.6208	1.6107	0.8496	10
51	0.5277	0.6212	1.6097	0.8494	9
52	0.5279	0.6216	1.6087	0.8493	8
53	0.5282	0.6220	1.6076	0.8491	7
54	0.5284	0.6224	1.6066	0.8490	6
55	0.5287	0.6228	1.6055	0.8488	5
56	0.5289	0.6233	1.6045	0.8487	4
57	0.5292	0.6237	1.6034	0.8485	3
58	0.5294	0.6241	1.6024	0.8484	2
59	0.5297	0.6245	1.6014	0.8482	1
60	0.5299	0.6249	1.6003	0.8480	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.5299	0.6249	1.6003	0.8480	60
1	0.5302	0.6253	1.5993	0.8479	59
2	0.5304	0.6257	1.5983	0.8477	58
3	0.5307	0.6261	1.5972	0.8476	57
4	0.5309	0.6265	1.5962	0.8474	56
5	0.5312	0.6269	1.5952	0.8473	55
6	0.5314	0.6273	1.5941	0.8471	54
7	0.5316	0.6277	1.5931	0.8470	53
8	0.5319	0.6281	1.5921	0.8468	52
9	0.5321	0.6285	1.5911	0.8467	51
10	0.5324	0.6289	1.5900	0.8465	50
11	0.5326	0.6293	1.5890	0.8463	49
12	0.5329	0.6297	1.5880	0.8462	48
13	0.5331	0.6301	1.5869	0.8460	47
14	0.5334	0.6305	1.5859	0.8459	46
15	0.5336	0.6310	1.5849	0.8457	45
16	0.5339	0.6314	1.5839	0.8456	44
17	0.5341	0.6318	1.5829	0.8454	43
18	0.5344	0.6322	1.5818	0.8453	42
19	0.5346	0.6326	1.5808	0.8451	41
20	0.5348	0.6330	1.5798	0.8450	40
21	0.5351	0.6334	1.5788	0.8448	39
22	0.5353	0.6338	1.5778	0.8446	38
23	0.5356	0.6342	1.5768	0.8445	37
24	0.5358	0.6346	1.5757	0.8443	36
25	0.5361	0.6350	1.5747	0.8442	35
26	0.5363	0.6354	1.5737	0.8440	34
27	0.5366	0.6358	1.5727	0.8439	33
28	0.5368	0.6363	1.5717	0.8437	32
29	0.5371	0.6367	1.5707	0.8435	31
30	0.5373	0.6371	1.5697	0.8434	30
31	0.5375	0.6375	1.5687	0.8432	29
32	0.5378	0.6379	1.5677	0.8431	28
33	0.5380	0.6383	1.5667	0.8429	27
34	0.5383	0.6387	1.5657	0.8428	26
35	0.5385	0.6391	1.5647	0.8426	25
36	0.5388	0.6395	1.5637	0.8425	24
37	0.5390	0.6399	1.5627	0.8423	23
38	0.5393	0.6403	1.5617	0.8421	22
39	0.5395	0.6408	1.5607	0.8420	21
40	0.5398	0.6412	1.5597	0.8418	20
41	0.5400	0.6416	1.5587	0.8417	19
42	0.5402	0.6420	1.5577	0.8415	18
43	0.5405	0.6424	1.5567	0.8414	17
44	0.5407	0.6428	1.5557	0.8412	16
45	0.5410	0.6432	1.5547	0.8410	15
46	0.5412	0.6436	1.5537	0.8409	14
47	0.5415	0.6440	1.5527	0.8407	13
48	0.5417	0.6445	1.5517	0.8406	12
49	0.5420	0.6449	1.5507	0.8404	11
50	0.5422	0.6453	1.5497	0.8403	10
51	0.5424	0.6457	1.5487	0.8401	9
52	0.5427	0.6461	1.5477	0.8399	8
53	0.5429	0.6465	1.5468	0.8398	7
54	0.5432	0.6469	1.5458	0.8396	6
55	0.5434	0.6473	1.5448	0.8395	5
56	0.5437	0.6478	1.5438	0.8393	4
57	0.5439	0.6482	1.5428	0.8391	3
58	0.5442	0.6486	1.5418	0.8390	2
59	0.5444	0.6490	1.5408	0.8388	1
60	0.5446	0.6494	1.5399	0.8387	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.5446	0.6494	1.5399	0.8387	60
1	0.5449	0.6498	1.5389	0.8385	59
2	0.5451	0.6502	1.5379	0.8384	58
3	0.5454	0.6506	1.5369	0.8382	57
4	0.5456	0.6511	1.5359	0.8380	56
5	0.5459	0.6515	1.5350	0.8379	55
6	0.5461	0.6519	1.5340	0.8377	54
7	0.5463	0.6523	1.5330	0.8376	53
8	0.5466	0.6527	1.5320	0.8374	52
9	0.5468	0.6531	1.5311	0.8372	51
10	0.5471	0.6536	1.5301	0.8371	50
11	0.5473	0.6540	1.5291	0.8369	49
12	0.5476	0.6544	1.5282	0.8368	48
13	0.5478	0.6548	1.5272	0.8366	47
14	0.5480	0.6552	1.5262	0.8364	46
15	0.5483	0.6556	1.5253	0.8363	45
16	0.5485	0.6560	1.5243	0.8361	44
17	0.5488	0.6565	1.5233	0.8360	43
18	0.5490	0.6569	1.5224	0.8358	42
19	0.5493	0.6573	1.5214	0.8356	41
20	0.5495	0.6577	1.5204	0.8355	40
21	0.5498	0.6581	1.5195	0.8353	39
22	0.5500	0.6585	1.5185	0.8352	38
23	0.5502	0.6590	1.5175	0.8350	37
24	0.5505	0.6594	1.5166	0.8348	36
25	0.5507	0.6598	1.5156	0.8347	35
26	0.5510	0.6602	1.5147	0.8345	34
27	0.5512	0.6606	1.5137	0.8344	33
28	0.5515	0.6610	1.5127	0.8342	32
29	0.5517	0.6615	1.5118	0.8340	31
30	0.5519	0.6619	1.5108	0.8339	30
31	0.5522	0.6623	1.5099	0.8337	29
32	0.5524	0.6627	1.5089	0.8336	28
33	0.5527	0.6631	1.5080	0.8334	27
34	0.5529	0.6636	1.5070	0.8332	26
35	0.5531	0.6640	1.5061	0.8331	25
36	0.5534	0.6644	1.5051	0.8329	24
37	0.5536	0.6648	1.5042	0.8328	23
38	0.5539	0.6652	1.5032	0.8326	22
39	0.5541	0.6657	1.5023	0.8324	21
40	0.5544	0.6661	1.5013	0.8323	20
41	0.5546	0.6665	1.5004	0.8321	19
42	0.5548	0.6669	1.4994	0.8320	18
43	0.5551	0.6673	1.4985	0.8318	17
44	0.5553	0.6678	1.4975	0.8316	16
45	0.5556	0.6682	1.4966	0.8315	15
46	0.5558	0.6686	1.4957	0.8313	14
47	0.5561	0.6690	1.4947	0.8311	13
48	0.5563	0.6694	1.4938	0.8310	12
49	0.5565	0.6699	1.4928	0.8308	11
50	0.5568	0.6703	1.4919	0.8307	10
51	0.5570	0.6707	1.4910	0.8305	9
52	0.5573	0.6711	1.4900	0.8303	8
53	0.5575	0.6715	1.4891	0.8302	7
54	0.5577	0.6720	1.4882	0.8300	6
55	0.5580	0.6724	1.4872	0.8298	5
56	0.5582	0.6728	1.4863	0.8297	4
57	0.5585	0.6732	1.4854	0.8295	3
58	0.5587	0.6737	1.4844	0.8294	2
59	0.5590	0.6741	1.4835	0.8292	1
60	0.5592	0.6745	1.4826	0.8290	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.5299	0.6249	1.6003	0.8480	60
1	0.5302	0.6253	1.5993	0.8479	59
2	0.5304	0.6257	1.5983	0.8477	58
3	0.5307	0.6261	1.5972	0.8476	57
4	0.5309	0.6265	1.5962	0.8474	56
5	0.5312	0.6269	1.5952	0.8473	55
6	0.5314	0.6273	1.5941	0.8471	54
7	0.5316	0.6277	1.5931	0.8470	53
8	0.5319	0.6281	1.5921	0.8468	52
9	0.5321	0.6285	1.5911	0.8467	51
10	0.5324	0.6289	1.5900	0.8465	50
11	0.5326	0.6293	1.5890	0.8463	49
12	0.5329	0.6297	1.5880	0.8462	48
13	0.5331	0.6301	1.5869	0.8460	47
14	0.5334	0.6305	1.5859	0.8459	46
15	0.5336	0.6310	1.5849	0.8457	45
16	0.5339	0.6314	1.5839	0.8456	44
17	0.5341	0.6318	1.5829	0.8454	43
18	0.5344	0.6322	1.5818	0.8453	42
19	0.5346	0.6326	1.5808	0.8451	41
20	0.5348	0.6330	1.5798	0.8450	40
21	0.5351	0.6334	1.5788	0.8448	39
22	0.5353	0.6338	1.5778	0.8446	38
23	0.5356	0.6342	1.5768	0.8445	37
24	0.5358	0.6346	1.5757	0.8443	36
25	0.5361	0.6350	1.5747	0.8442	35
26	0.5363	0.6354	1.5737	0.8440	34
27	0.5366	0.6358	1.5727	0.8439	33
28	0.5368	0.6363	1.5717	0.8437	32
29	0.5371	0.6367	1.5707	0.8435	31
30	0.5373	0.6371	1.5697	0.8434	30
31	0.5375	0.6375	1.5687	0.8432	29
32	0.5378	0.6379	1.5677	0.8431	28
33	0.5380	0.6383	1.5667	0.8429	27
34	0.5383	0.6387	1.5657	0.8428	26
35	0.5385	0.6391	1.5647	0.8426	25
36	0.5388	0.6395	1.5637	0.8425	24
37	0.5390	0.6399	1.5627	0.8423	23
38	0.5393	0.6403	1.5617	0.8421	22
39	0.5395	0.6408	1.5607	0.8420	21
40	0.5398	0.6412	1.5597	0.8418	20
41	0.5400	0.6416	1.5587	0.8417	19
42	0.5402	0.6420	1.5577	0.8415	18
43	0.5405	0.6424	1.5567	0.8414	17
44	0.5407	0.6428	1.5557	0.8412	16
45	0.5410	0.6432	1.5547	0.8410	15
46	0.5412	0.6436	1.5537	0.8409	14
47	0.5415	0.6440	1.5527	0.8407	13
48	0.5417	0.6445	1.5517	0.8406	12
49	0.5420	0.6449	1.5507	0.8404	11
50	0.5422	0.6453	1.5497	0.8403	10
51	0.5424	0.6457	1.5487	0.8401	9
52	0.5427	0.6461	1.5477	0.8399	8
53	0.5429	0.6465	1.5468	0.8398	7
54	0.5432	0.6469	1.5458	0.8396	6
55	0.5434	0.6473	1.5448	0.8395	5
56	0.5437	0.6478	1.5438	0.8393	4
57	0.5439	0.6482	1.5428	0.8391	3
58	0.5442	0.6486	1.5418	0.8390	2
59	0.5444	0.6490	1.5408	0.8388	1
60	0.5446	0.6494	1.5399	0.8387	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.5446	0.6494	1.5399	0.8387	60
1	0.5449	0.6498	1.5389	0.8385	59
2	0.5451	0.6502	1.5379	0.8384	58
3	0.5454	0.6506	1.5369	0.8382	57
4	0.5456	0.6511	1.5359	0.8380	56
5	0.5459	0.6515	1.5350	0.8379	55
6	0.5461	0.6519	1.5340	0.8377	54
7	0.5463	0.6523	1.5330	0.8376	53
8	0.5466	0.6527	1.5320	0.8374	52
9	0.5468	0.6531	1.5311	0.8372	51
10	0.5471	0.6536	1.5301	0.8371	50
11	0.5473	0.6540	1.5291	0.8369	49
12	0.5476	0.6544	1.5282	0.8368	48
13	0.5478	0.6548	1.5272	0.8366	47
14	0.5480	0.6552	1.5262	0.8364	46
15	0.5483	0.6556	1.5253	0.8363	45
16	0.5485	0.6560	1.5243	0.8361	44
17	0.5488	0.6565	1.5233	0.8360	43
18	0.5490	0.6569	1.5224	0.8358	42
19	0.5493	0.6573	1.5214	0.8356	41
20	0.5495	0.6577	1.5204	0.8355	40
21	0.5498	0.6581	1.5195	0.8353	39
22	0.5500	0.6585	1.5185	0.8352	38
23	0.5502	0.6590	1.5175	0.8350	37
24	0.5505	0.6594	1.5166	0.8348	36
25	0.5507	0.6598	1.5156	0.8347	35
26	0.5510	0.6602	1.5147	0.8345	34
27	0.5512	0.6606	1.5137	0.8344	33
28	0.5515	0.6610	1.5127	0.8342	32
29	0.5517	0.6615	1.5118	0.8340	31
30	0.5519	0.6619	1.5108	0.8339	30
31	0.5522	0.6623	1.5099	0.8337	29
32	0.5524	0.6627	1.5089	0.8336	28
33	0.5527	0.6631	1.5080	0.8334	27
34	0.5529	0.6636	1.5070	0.8332	26
35	0.5531	0.6640	1.5061	0.8331	25
36	0.5534	0.6644	1.5051	0.8329	24
37	0.5536	0.6648	1.5042	0.8328	23
38	0.5539	0.6652	1.5032	0.8326	22
39	0.5541	0.6657	1.5023	0.8324	21
40	0.5544	0.6661	1.5013	0.8323	20
41	0.5546	0.6665	1.5004	0.8321	19
42	0.5548	0.6669	1.4994	0.8320	18
43	0.5551	0.6673	1.4985	0.8318	17
44	0.5553	0.6678	1.4975	0.8316	16
45	0.5556	0.6682	1.4966	0.8315	15
46	0.5558	0.6686	1.4957	0.8313	14
47	0.5561	0.6690	1.4947	0.8311	13
48	0.5563	0.6694	1.4938	0.8310	12
49	0.5565	0.6699	1.4928	0.8308	11
50	0.5568	0.6703	1.4919	0.8307	10
51	0.5570	0.6707	1.4910	0.8305	9
52	0.5573	0.6711	1.4900	0.8303	8
53	0.5575	0.6715	1.4891	0.8302	7
54	0.5577	0.6720	1.4882	0.8300	6
55	0.5580	0.6724	1.4872	0.8298	5
56	0.5582	0.6728	1.4863	0.8297	4
57	0.5585	0.6732	1.4854	0.8295	3
58	0.5587	0.6737	1.4844	0.8294	2
59	0.5590	0.6741	1.4835	0.8292	1
60	0.5592	0.6745	1.4826	0.8290	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.5592	0.6745	1.4826	0.8290	60
1	0.5594	0.6749	1.4816	0.8289	59
2	0.5597	0.6754	1.4807	0.8287	58
3	0.5599	0.6758	1.4798	0.8285	57
4	0.5602	0.6762	1.4788	0.8284	56
5	0.5604	0.6766	1.4779	0.8282	55
6	0.5606	0.6771	1.4770	0.8281	54
7	0.5609	0.6775	1.4761	0.8279	53
8	0.5611	0.6779	1.4751	0.8277	52
9	0.5614	0.6783	1.4742	0.8276	51
10	0.5616	0.6787	1.4733	0.8274	50
11	0.5618	0.6792	1.4724	0.8272	49
12	0.5621	0.6796	1.4715	0.8271	48
13	0.5623	0.6800	1.4705	0.8269	47
14	0.5626	0.6805	1.4696	0.8268	46
15	0.5628	0.6809	1.4687	0.8266	45
16	0.5630	0.6813	1.4678	0.8264	44
17	0.5633	0.6817	1.4669	0.8263	43
18	0.5635	0.6822	1.4659	0.8261	42
19	0.5638	0.6826	1.4650	0.8259	41
20	0.5640	0.6830	1.4641	0.8258	40
21	0.5642	0.6834	1.4632	0.8256	39
22	0.5645	0.6839	1.4623	0.8254	38
23	0.5647	0.6843	1.4614	0.8253	37
24	0.5650	0.6847	1.4605	0.8251	36
25	0.5652	0.6851	1.4596	0.8249	35
26	0.5654	0.6856	1.4586	0.8248	34
27	0.5657	0.6860	1.4577	0.8246	33
28	0.5659	0.6864	1.4568	0.8245	32
29	0.5662	0.6869	1.4559	0.8243	31
30	0.5664	0.6873	1.4550	0.8241	30
31	0.5666	0.6877	1.4541	0.8240	29
32	0.5669	0.6881	1.4532	0.8238	28
33	0.5671	0.6886	1.4523	0.8236	27
34	0.5674	0.6890	1.4514	0.8235	26
35	0.5676	0.6894	1.4505	0.8233	25
36	0.5678	0.6899	1.4496	0.8231	24
37	0.5681	0.6903	1.4487	0.8230	23
38	0.5683	0.6907	1.4478	0.8228	22
39	0.5686	0.6911	1.4469	0.8226	21
40	0.5688	0.6916	1.4460	0.8225	20
41	0.5690	0.6920	1.4451	0.8223	19
42	0.5693	0.6924	1.4442	0.8221	18
43	0.5695	0.6929	1.4433	0.8220	17
44	0.5698	0.6933	1.4424	0.8218	16
45	0.5700	0.6937	1.4415	0.8216	15
46	0.5702	0.6942	1.4406	0.8215	14
47	0.5705	0.6946	1.4397	0.8213	13
48	0.5707	0.6950	1.4388	0.8211	12
49	0.5710	0.6954	1.4379	0.8210	11
50	0.5712	0.6959	1.4370	0.8208	10
51	0.5714	0.6963	1.4361	0.8207	9
52	0.5717	0.6967	1.4352	0.8205	8
53	0.5719	0.6972	1.4344	0.8203	7
54	0.5721	0.6976	1.4335	0.8202	6
55	0.5724	0.6980	1.4326	0.8200	5
56	0.5726	0.6985	1.4317	0.8198	4
57	0.5729	0.6989	1.4308	0.8197	3
58	0.5731	0.6993	1.4299	0.8195	2
59	0.5733	0.6998	1.4290	0.8193	1
60	0.5736	0.7002	1.4281	0.8192	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.5736	0.7002	1.4281	0.8192	60
1	0.5738	0.7006	1.4273	0.8190	59
2	0.5741	0.7011	1.4264	0.8188	58
3	0.5743	0.7015	1.4255	0.8187	57
4	0.5745	0.7019	1.4246	0.8185	56
5	0.5748	0.7024	1.4237	0.8183	55
6	0.5750	0.7028	1.4229	0.8181	54
7	0.5752	0.7032	1.4220	0.8180	53
8	0.5755	0.7037	1.4211	0.8178	52
9	0.5757	0.7041	1.4202	0.8176	51
10	0.5760	0.7046	1.4193	0.8175	50
11	0.5762	0.7050	1.4185	0.8173	49
12	0.5764	0.7054	1.4176	0.8171	48
13	0.5767	0.7059	1.4167	0.8170	47
14	0.5769	0.7063	1.4158	0.8168	46
15	0.5771	0.7067	1.4150	0.8166	45
16	0.5774	0.7072	1.4141	0.8165	44
17	0.5776	0.7076	1.4132	0.8163	43
18	0.5779	0.7080	1.4124	0.8161	42
19	0.5781	0.7085	1.4115	0.8160	41
20	0.5783	0.7089	1.4106	0.8158	40
21	0.5786	0.7094	1.4097	0.8156	39
22	0.5788	0.7098	1.4089	0.8155	38
23	0.5790	0.7102	1.4080	0.8153	37
24	0.5793	0.7107	1.4071	0.8151	36
25	0.5795	0.7111	1.4063	0.8150	35
26	0.5798	0.7115	1.4054	0.8148	34
27	0.5800	0.7120	1.4045	0.8146	33
28	0.5802	0.7124	1.4037	0.8145	32
29	0.5805	0.7129	1.4028	0.8143	31
30	0.5807	0.7133	1.4019	0.8141	30
31	0.5809	0.7137	1.4011	0.8139	29
32	0.5812	0.7142	1.4002	0.8138	28
33	0.5814	0.7146	1.3994	0.8136	27
34	0.5816	0.7151	1.3985	0.8134	26
35	0.5819	0.7155	1.3976	0.8133	25
36	0.5821	0.7159	1.3968	0.8131	24
37	0.5824	0.7164	1.3959	0.8129	23
38	0.5826	0.7168	1.3951	0.8128	22
39	0.5828	0.7173	1.3942	0.8126	21
40	0.5831	0.7177	1.3934	0.8124	20
41	0.5833	0.7181	1.3925	0.8123	19
42	0.5835	0.7186	1.3916	0.8121	18
43	0.5838	0.7190	1.3908	0.8119	17
44	0.5840	0.7195	1.3899	0.8117	16
45	0.5842	0.7199	1.3891	0.8116	15
46	0.5845	0.7203	1.3882	0.8114	14
47	0.5847	0.7208	1.3874	0.8112	13
48	0.5850	0.7212	1.3865	0.8111	12
49	0.5852	0.7217	1.3857	0.8109	11
50	0.5854	0.7221	1.3848	0.8107	10
51	0.5857	0.7226	1.3840	0.8106	9
52	0.5859	0.7230	1.3831	0.8104	8
53	0.5861	0.7234	1.3823	0.8102	7
54	0.5864	0.7239	1.3814	0.8100	6
55	0.5866	0.7243	1.3806	0.8099	5
56	0.5868	0.7248	1.3798	0.8097	4
57	0.5871	0.7252	1.3789	0.8095	3
58	0.5873	0.7257	1.3781	0.8094	2
59	0.5875	0.7261	1.3772	0.8092	1
60	0.5878	0.7265	1.3764	0.8090	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.5878	0.7265	1.3764	0.8090	60
1	0.5880	0.7270	1.3755	0.8088	59
2	0.5883	0.7274	1.3747	0.8087	58
3	0.5885	0.7279	1.3739	0.8085	57
4	0.5887	0.7283	1.3730	0.8083	56
5	0.5890	0.7288	1.3722	0.8082	55
6	0.5892	0.7292	1.3713	0.8080	54
7	0.5894	0.7297	1.3705	0.8078	53
8	0.5897	0.7301	1.3697	0.8076	52
9	0.5899	0.7306	1.3688	0.8075	51
10	0.5901	0.7310	1.3680	0.8073	50
11	0.5904	0.7314	1.3672	0.8071	49
12	0.5906	0.7319	1.3663	0.8070	48
13	0.5908	0.7323	1.3655	0.8068	47
14	0.5911	0.7328	1.3647	0.8066	46
15	0.5913	0.7332	1.3638	0.8064	45
16	0.5915	0.7337	1.3630	0.8063	44
17	0.5918	0.7341	1.3622	0.8061	43
18	0.5920	0.7346	1.3613	0.8059	42
19	0.5922	0.7350	1.3605	0.8058	41
20	0.5925	0.7355	1.3597	0.8056	40
21	0.5927	0.7359	1.3588	0.8054	39
22	0.5930	0.7364	1.3580	0.8052	38
23	0.5932	0.7368	1.3572	0.8051	37
24	0.5934	0.7373	1.3564	0.8049	36
25	0.5937	0.7377	1.3555	0.8047	35
26	0.5939	0.7382	1.3547	0.8045	34
27	0.5941	0.7386	1.3539	0.8044	33
28	0.5944	0.7391	1.3531	0.8042	32
29	0.5946	0.7395	1.3522	0.8040	31
30	0.5948	0.7400	1.3514	0.8039	30
31	0.5951	0.7404	1.3506	0.8037	29
32	0.5953	0.7409	1.3498	0.8035	28
33	0.5955	0.7413	1.3490	0.8033	27
34	0.5958	0.7418	1.3481	0.8032	26
35	0.5960	0.7422	1.3473	0.8030	25
36	0.5962	0.7427	1.3465	0.8028	24
37	0.5965	0.7431	1.3457	0.8026	23
38	0.5967	0.7436	1.3449	0.8025	22
39	0.5969	0.7440	1.3440	0.8023	21
40	0.5972	0.7445	1.3432	0.8021	20
41	0.5974	0.7449	1.3424	0.8019	19
42	0.5976	0.7454	1.3416	0.8018	18
43	0.5979	0.7458	1.3408	0.8016	17
44	0.5981	0.7463	1.3400	0.8014	16
45	0.5983	0.7467	1.3392	0.8013	15
46	0.5986	0.7472	1.3384	0.8011	14
47	0.5988	0.7476	1.3375	0.8009	13
48	0.5990	0.7481	1.3367	0.8007	12
49	0.5993	0.7485	1.3359	0.8006	11
50	0.5995	0.7490	1.3351	0.8004	10
51	0.5997	0.7495	1.3343	0.8002	9
52	0.6000	0.7499	1.3335	0.8000	8
53	0.6002	0.7504	1.3327	0.7999	7
54	0.6004	0.7508	1.3319	0.7997	6
55	0.6007	0.7513	1.3311	0.7995	5
56	0.6009	0.7517	1.3303	0.7993	4
57	0.6011	0.7522	1.3295	0.7992	3
58	0.6014	0.7526	1.3287	0.7990	2
59	0.6016	0.7531	1.3278	0.7988	1
60	0.6018	0.7536	1.3270	0.7986	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.6018	0.7536	1.3270	0.7986	60
1	0.6020	0.7540	1.3262	0.7985	59
2	0.6023	0.7545	1.3254	0.7983	58
3	0.6025	0.7549	1.3246	0.7981	57
4	0.6027	0.7554	1.3238	0.7979	56
5	0.6030	0.7558	1.3230	0.7978	55
6	0.6032	0.7563	1.3222	0.7976	54
7	0.6034	0.7568	1.3214	0.7974	53
8	0.6037	0.7572	1.3206	0.7972	52
9	0.6039	0.7577	1.3198	0.7971	51
10	0.6041	0.7581	1.3190	0.7969	50
11	0.6044	0.7586	1.3182	0.7967	49
12	0.6046	0.7590	1.3175	0.7965	48
13	0.6048	0.7595	1.3167	0.7964	47
14	0.6051	0.7600	1.3159	0.7962	46
15	0.6053	0.7604	1.3151	0.7960	45
16	0.6055	0.7609	1.3143	0.7958	44
17	0.6058	0.7613	1.3135	0.7956	43
18	0.6060	0.7618	1.3127	0.7955	42
19	0.6062	0.7623	1.3119	0.7953	41
20	0.6065	0.7627	1.3111	0.7951	40
21	0.6067	0.7632	1.3103	0.7949	39
22	0.6069	0.7636	1.3095	0.7948	38
23	0.6071	0.7641	1.3087	0.7946	37
24	0.6074	0.7646	1.3079	0.7944	36
25	0.6076	0.7650	1.3072	0.7942	35
26	0.6078	0.7655	1.3064	0.7941	34
27	0.6081	0.7659	1.3056	0.7939	33
28	0.6083	0.7664	1.3048	0.7937	32
29	0.6085	0.7669	1.3040	0.7935	31
30	0.6088	0.7673	1.3032	0.7934	30
31	0.6090	0.7678	1.3024	0.7932	29
32	0.6092	0.7683	1.3017	0.7930	28
33	0.6095	0.7687	1.3009	0.7928	27
34	0.6097	0.7692	1.3001	0.7926	26
35	0.6099	0.7696	1.2993	0.7925	25
36	0.6101	0.7701	1.2985	0.7923	24
37	0.6104	0.7706	1.2977	0.7921	23
38	0.6106	0.7710	1.2970	0.7919	22
39	0.6108	0.7715	1.2962	0.7918	21
40	0.6111	0.7720	1.2954	0.7916	20
41	0.6113	0.7724	1.2946	0.7914	19
42	0.6115	0.7729	1.2938	0.7912	18
43	0.6118	0.7734	1.2931	0.7910	17
44	0.6120	0.7738	1.2923	0.7909	16
45	0.6122	0.7743	1.2915	0.7907	15
46	0.6124	0.7747	1.2907	0.7905	14
47	0.6127	0.7752	1.2900	0.7903	13
48	0.6129	0.7757	1.2892	0.7902	12
49	0.6131	0.7761	1.2884	0.7900	11
50	0.6134	0.7766	1.2876	0.7898	10
51	0.6136	0.7771	1.2869	0.7896	9
52	0.6138	0.7775	1.2861	0.7894	8
53	0.6141	0.7780	1.2853	0.7893	7
54	0.6143	0.7785	1.2846	0.7891	6
55	0.6145	0.7789	1.2838	0.7889	5
56	0.6147	0.7794	1.2830	0.7887	4
57	0.6150	0.7799	1.2822	0.7885	3
58	0.6152	0.7803	1.2815	0.7884	2
59	0.6154	0.7808	1.2807	0.7882	1
60	0.6157	0.7813	1.2799	0.7880	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.6157	0.7813	1.2799	0.7880	60
1	0.6159	0.7818	1.2792	0.7878	59
2	0.6161	0.7822	1.2784	0.7877	58
3	0.6163	0.7827	1.2776	0.7875	57
4	0.6166	0.7832	1.2769	0.7873	56
5	0.6168	0.7836	1.2761	0.7871	55
6	0.6170	0.7841	1.2753	0.7869	54
7	0.6173	0.7846	1.2746	0.7868	53
8	0.6175	0.7850	1.2738	0.7866	52
9	0.6177	0.7855	1.2731	0.7864	51
10	0.6180	0.7860	1.2723	0.7862	50
11	0.6182	0.7865	1.2715	0.7860	49
12	0.6184	0.7869	1.2708	0.7859	48
13	0.6186	0.7874	1.2700	0.7857	47
14	0.6189	0.7879	1.2693	0.7855	46
15	0.6191	0.7883	1.2685	0.7853	45
16	0.6193	0.7888	1.2677	0.7851	44
17	0.6196	0.7893	1.2670	0.7850	43
18	0.6198	0.7898	1.2662	0.7848	42
19	0.6200	0.7902	1.2655	0.7846	41
20	0.6202	0.7907	1.2647	0.7844	40
21	0.6205	0.7912	1.2640	0.7842	39
22	0.6207	0.7916	1.2632	0.7841	38
23	0.6209	0.7921	1.2624	0.7839	37
24	0.6211	0.7926	1.2617	0.7837	36
25	0.6214	0.7931	1.2609	0.7835	35
26	0.6216	0.7935	1.2602	0.7833	34
27	0.6218	0.7940	1.2594	0.7832	33
28	0.6221	0.7945	1.2587	0.7830	32
29	0.6223	0.7950	1.2579	0.7828	31
30	0.6225	0.7954	1.2572	0.7826	30
31	0.6227	0.7959	1.2564	0.7824	29
32	0.6230	0.7964	1.2557	0.7822	28
33	0.6232	0.7969	1.2549	0.7821	27
34	0.6234	0.7973	1.2542	0.7819	26
35	0.6237	0.7978	1.2534	0.7817	25
36	0.6239	0.7983	1.2527	0.7815	24
37	0.6241	0.7988	1.2519	0.7813	23
38	0.6243	0.7992	1.2512	0.7812	22
39	0.6246	0.7997	1.2504	0.7810	21
40	0.6248	0.8002	1.2497	0.7808	20
41	0.6250	0.8007	1.2489	0.7806	19
42	0.6252	0.8012	1.2482	0.7804	18
43	0.6255	0.8016	1.2475	0.7802	17
44	0.6257	0.8021	1.2467	0.7801	16
45	0.6259	0.8026	1.2460	0.7799	15
46	0.6262	0.8031	1.2452	0.7797	14
47	0.6264	0.8035	1.2445	0.7795	13
48	0.6266	0.8040	1.2437	0.7793	12
49	0.6268	0.8045	1.2430	0.7792	11
50	0.6271	0.8050	1.2423	0.7790	10
51	0.6273	0.8055	1.2415	0.7788	9
52	0.6275	0.8059	1.2408	0.7786	8
53	0.6277	0.8064	1.2401	0.7784	7
54	0.6280	0.8069	1.2393	0.7782	6
55	0.6282	0.8074	1.2386	0.7781	5
56	0.6284	0.8079	1.2378	0.7779	4
57	0.6286	0.8083	1.2371	0.7777	3
58	0.6289	0.8088	1.2364	0.7775	2
59	0.6291	0.8093	1.2356	0.7773	1
60	0.6293	0.8098	1.2349	0.7771	0

	Sin	Tan	Cot	Cos	
0	0.6293	0.8098	1.2349	0.7771	60
1	0.6295	0.8103	1.2342	0.7770	59
2	0.6298	0.8107	1.2334	0.7768	58
3	0.6300	0.8112	1.2327	0.7766	57
4	0.6302	0.8117	1.2320	0.7764	56
5	0.6305	0.8122	1.2312	0.7762	55
6	0.6307	0.8127	1.2305	0.7760	54
7	0.6309	0.8132	1.2298	0.7759	53
8	0.6311	0.8136	1.2290	0.7757	52
9	0.6314	0.8141	1.2283	0.7755	51
10	0.6316	0.8146	1.2276	0.7753	50
11	0.6318	0.8151	1.2268	0.7751	49
12	0.6320	0.8156	1.2261	0.7749	48
13	0.6323	0.8161	1.2254	0.7748	47
14	0.6325	0.8165	1.2247	0.7746	46
15	0.6327	0.8170	1.2239	0.7744	45
16	0.6329	0.8175	1.2232	0.7742	44
17	0.6332	0.8180	1.2225	0.7740	43
18	0.6334	0.8185	1.2218	0.7738	42
19	0.6336	0.8190	1.2210	0.7737	41
20	0.6338	0.8195	1.2203	0.7735	40
21	0.6341	0.8199	1.2196	0.7733	39
22	0.6343	0.8204	1.2189	0.7731	38
23	0.6345	0.8209	1.2181	0.7729	37
24	0.6347	0.8214	1.2174	0.7727	36
25	0.6350	0.8219	1.2167	0.7725	35
26	0.6352	0.8224	1.2160	0.7724	34
27	0.6354	0.8229	1.2153	0.7722	33
28	0.6356	0.8234	1.2145	0.7720	32
29	0.6359	0.8238	1.2138	0.7718	31
30	0.6361	0.8243	1.2131	0.7716	30
31	0.6363	0.8248	1.2124	0.7714	29
32	0.6365	0.8253	1.2117	0.7713	28
33	0.6368	0.8258	1.2109	0.7711	27
34	0.6370	0.8263	1.2102	0.7709	26
35	0.6372	0.8268	1.2095	0.7707	25
36	0.6374	0.8273	1.2088	0.7705	24
37	0.6376	0.8278	1.2081	0.7703	23
38	0.6379	0.8283	1.2074	0.7701	22
39	0.6381	0.8287	1.2066	0.7700	21
40	0.6383	0.8292	1.2059	0.7698	20
41	0.6385	0.8297	1.2052	0.7696	19
42	0.6388	0.8302	1.2045	0.7694	18
43	0.6390	0.8307	1.2038	0.7692	17
44	0.6392	0.8312	1.2031	0.7690	16
45	0.6394	0.8317	1.2024	0.7688	15
46	0.6397	0.8322	1.2017	0.7687	14
47	0.6399	0.8327	1.2009	0.7685	13
48	0.6401	0.8332	1.2002	0.7683	12
49	0.6403	0.8337	1.1995	0.7681	11
50	0.6406	0.8342	1.1988	0.7679	10
51	0.6408	0.8346	1.1981	0.7677	9
52	0.6410	0.8351	1.1974	0.7675	8
53	0.6412	0.8356	1.1967	0.7674	7
54	0.6414	0.8361	1.1960	0.7672	6
55	0.6417	0.8366	1.1953	0.7670	5
56	0.6419	0.8371	1.1946	0.7668	4
57	0.6421	0.8376	1.1939	0.7666	3
58	0.6423	0.8381	1.1932	0.7664	2
59	0.6426	0.8386	1.1925	0.7662	1
60	0.6428	0.8391	1.1918	0.7660	0

Cos Cot Tan Sin

Cos Cot Tan Sin

	Sin	Tan	Cot	Cos	
0	0.6428	0.8391	1.1918	0.7660	60
1	0.6430	0.8396	1.1910	0.7659	59
2	0.6432	0.8401	1.1903	0.7657	58
3	0.6435	0.8406	1.1896	0.7655	57
4	0.6437	0.8411	1.1889	0.7653	56
5	0.6439	0.8416	1.1882	0.7651	55
6	0.6441	0.8421	1.1875	0.7649	54
7	0.6443	0.8426	1.1868	0.7647	53
8	0.6446	0.8431	1.1861	0.7645	52
9	0.6448	0.8436	1.1854	0.7644	51
10	0.6450	0.8441	1.1847	0.7642	50
11	0.6452	0.8446	1.1840	0.7640	49
12	0.6455	0.8451	1.1833	0.7638	48
13	0.6457	0.8456	1.1826	0.7636	47
14	0.6459	0.8461	1.1819	0.7634	46
15	0.6461	0.8466	1.1812	0.7632	45
16	0.6463	0.8471	1.1806	0.7630	44
17	0.6466	0.8476	1.1799	0.7629	43
18	0.6468	0.8481	1.1792	0.7627	42
19	0.6470	0.8486	1.1785	0.7625	41
20	0.6472	0.8491	1.1778	0.7623	40
21	0.6475	0.8496	1.1771	0.7621	39
22	0.6477	0.8501	1.1764	0.7619	38
23	0.6479	0.8506	1.1757	0.7617	37
24	0.6481	0.8511	1.1750	0.7615	36
25	0.6483	0.8516	1.1743	0.7613	35
26	0.6486	0.8521	1.1736	0.7612	34
27	0.6488	0.8526	1.1729	0.7610	33
28	0.6490	0.8531	1.1722	0.7608	32
29	0.6492	0.8536	1.1715	0.7606	31
30	0.6494	0.8541	1.1708	0.7604	30
31	0.6497	0.8546	1.1702	0.7602	29
32	0.6499	0.8551	1.1695	0.7600	28
33	0.6501	0.8556	1.1688	0.7598	27
34	0.6503	0.8561	1.1681	0.7596	26
35	0.6506	0.8566	1.1674	0.7595	25
36	0.6508	0.8571	1.1667	0.7593	24
37	0.6510	0.8576	1.1660	0.7591	23
38	0.6512	0.8581	1.1653	0.7589	22
39	0.6514	0.8586	1.1647	0.7587	21
40	0.6517	0.8591	1.1640	0.7585	20
41	0.6519	0.8596	1.1633	0.7583	19
42	0.6521	0.8601	1.1626	0.7581	18
43	0.6523	0.8606	1.1619	0.7579	17
44	0.6525	0.8611	1.1612	0.7578	16
45	0.6528	0.8617	1.1606	0.7576	15
46	0.6530	0.8622	1.1599	0.7574	14
47	0.6532	0.8627	1.1592	0.7572	13
48	0.6534	0.8632	1.1585	0.7570	12
49	0.6536	0.8637	1.1578	0.7568	11
50	0.6539	0.8642	1.1571	0.7566	10
51	0.6541	0.8647	1.1565	0.7564	9
52	0.6543	0.8652	1.1558	0.7562	8
53	0.6545	0.8657	1.1551	0.7560	7
54	0.6547	0.8662	1.1544	0.7559	6
55	0.6550	0.8667	1.1538	0.7557	5
56	0.6552	0.8672	1.1531	0.7555	4
57	0.6554	0.8678	1.1524	0.7553	3
58	0.6556	0.8683	1.1517	0.7551	2
59	0.6558	0.8688	1.1510	0.7549	1
60	0.6561	0.8693	1.1504	0.7547	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.6561	0.8693	1.1504	0.7547	60
1	0.6563	0.8698	1.1497	0.7545	59
2	0.6565	0.8703	1.1490	0.7543	58
3	0.6567	0.8708	1.1483	0.7541	57
4	0.6569	0.8713	1.1477	0.7539	56
5	0.6572	0.8718	1.1470	0.7538	55
6	0.6574	0.8724	1.1463	0.7536	54
7	0.6576	0.8729	1.1456	0.7534	53
8	0.6578	0.8734	1.1450	0.7532	52
9	0.6580	0.8739	1.1443	0.7530	51
10	0.6583	0.8744	1.1436	0.7528	50
11	0.6585	0.8749	1.1430	0.7526	49
12	0.6587	0.8754	1.1423	0.7524	48
13	0.6589	0.8759	1.1416	0.7522	47
14	0.6591	0.8765	1.1410	0.7520	46
15	0.6593	0.8770	1.1403	0.7518	45
16	0.6596	0.8775	1.1396	0.7516	44
17	0.6598	0.8780	1.1389	0.7515	43
18	0.6600	0.8785	1.1383	0.7513	42
19	0.6602	0.8790	1.1376	0.7511	41
20	0.6604	0.8796	1.1369	0.7509	40
21	0.6607	0.8801	1.1363	0.7507	39
22	0.6609	0.8806	1.1356	0.7505	38
23	0.6611	0.8811	1.1349	0.7503	37
24	0.6613	0.8816	1.1343	0.7501	36
25	0.6615	0.8821	1.1336	0.7499	35
26	0.6617	0.8827	1.1329	0.7497	34
27	0.6620	0.8832	1.1323	0.7495	33
28	0.6622	0.8837	1.1316	0.7493	32
29	0.6624	0.8842	1.1310	0.7491	31
30	0.6626	0.8847	1.1303	0.7490	30
31	0.6628	0.8852	1.1296	0.7488	29
32	0.6631	0.8858	1.1290	0.7486	28
33	0.6633	0.8863	1.1283	0.7484	27
34	0.6635	0.8868	1.1276	0.7482	26
35	0.6637	0.8873	1.1270	0.7480	25
36	0.6639	0.8878	1.1263	0.7478	24
37	0.6641	0.8884	1.1257	0.7476	23
38	0.6644	0.8889	1.1250	0.7474	22
39	0.6646	0.8894	1.1243	0.7472	21
40	0.6648	0.8899	1.1237	0.7470	20
41	0.6650	0.8904	1.1230	0.7468	19
42	0.6652	0.8910	1.1224	0.7466	18
43	0.6654	0.8915	1.1217	0.7464	17
44	0.6657	0.8920	1.1211	0.7463	16
45	0.6659	0.8925	1.1204	0.7461	15
46	0.6661	0.8931	1.1197	0.7459	14
47	0.6663	0.8936	1.1191	0.7457	13
48	0.6665	0.8941	1.1184	0.7455	12
49	0.6667	0.8946	1.1178	0.7453	11
50	0.6670	0.8952	1.1171	0.7451	10
51	0.6672	0.8957	1.1165	0.7449	9
52	0.6674	0.8962	1.1158	0.7447	8
53	0.6676	0.8967	1.1152	0.7445	7
54	0.6678	0.8972	1.1145	0.7443	6
55	0.6680	0.8978	1.1139	0.7441	5
56	0.6683	0.8983	1.1132	0.7439	4
57	0.6685	0.8988	1.1126	0.7437	3
58	0.6687	0.8994	1.1119	0.7435	2
59	0.6689	0.8999	1.1113	0.7433	1
60	0.6691	0.9004	1.1106	0.7431	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.6691	0.9004	1.1106	0.7431	60
1	0.6693	0.9009	1.1100	0.7430	59
2	0.6696	0.9015	1.1093	0.7428	58
3	0.6698	0.9020	1.1087	0.7426	57
4	0.6700	0.9025	1.1080	0.7424	56
5	0.6702	0.9030	1.1074	0.7422	55
6	0.6704	0.9036	1.1067	0.7420	54
7	0.6706	0.9041	1.1061	0.7418	53
8	0.6709	0.9046	1.1054	0.7416	52
9	0.6711	0.9052	1.1048	0.7414	51
10	0.6713	0.9057	1.1041	0.7412	50
11	0.6715	0.9062	1.1035	0.7410	49
12	0.6717	0.9067	1.1028	0.7408	48
13	0.6719	0.9073	1.1022	0.7406	47
14	0.6722	0.9078	1.1016	0.7404	46
15	0.6724	0.9083	1.1009	0.7402	45
16	0.6726	0.9089	1.1003	0.7400	44
17	0.6728	0.9094	1.0996	0.7398	43
18	0.6730	0.9099	1.0990	0.7396	42
19	0.6732	0.9105	1.0983	0.7394	41
20	0.6734	0.9110	1.0977	0.7392	40
21	0.6737	0.9115	1.0971	0.7390	39
22	0.6739	0.9121	1.0964	0.7388	38
23	0.6741	0.9126	1.0958	0.7387	37
24	0.6743	0.9131	1.0951	0.7385	36
25	0.6745	0.9137	1.0945	0.7383	35
26	0.6747	0.9142	1.0939	0.7381	34
27	0.6749	0.9147	1.0932	0.7379	33
28	0.6752	0.9153	1.0926	0.7377	32
29	0.6754	0.9158	1.0919	0.7375	31
30	0.6756	0.9163	1.0913	0.7373	30
31	0.6758	0.9169	1.0907	0.7371	29
32	0.6760	0.9174	1.0900	0.7369	28
33	0.6762	0.9179	1.0894	0.7367	27
34	0.6764	0.9185	1.0888	0.7365	26
35	0.6767	0.9190	1.0881	0.7363	25
36	0.6769	0.9195	1.0875	0.7361	24
37	0.6771	0.9201	1.0869	0.7359	23
38	0.6773	0.9206	1.0862	0.7357	22
39	0.6775	0.9212	1.0856	0.7355	21
40	0.6777	0.9217	1.0850	0.7353	20
41	0.6779	0.9222	1.0843	0.7351	19
42	0.6782	0.9228	1.0837	0.7349	18
43	0.6784	0.9233	1.0831	0.7347	17
44	0.6786	0.9239	1.0824	0.7345	16
45	0.6788	0.9244	1.0818	0.7343	15
46	0.6790	0.9249	1.0812	0.7341	14
47	0.6792	0.9255	1.0805	0.7339	13
48	0.6794	0.9260	1.0799	0.7337	12
49	0.6797	0.9266	1.0793	0.7335	11
50	0.6799	0.9271	1.0786	0.7333	10
51	0.6801	0.9276	1.0780	0.7331	9
52	0.6803	0.9282	1.0774	0.7329	8
53	0.6805	0.9287	1.0768	0.7327	7
54	0.6807	0.9293	1.0761	0.7325	6
55	0.6809	0.9298	1.0755	0.7323	5
56	0.6811	0.9303	1.0749	0.7321	4
57	0.6814	0.9309	1.0742	0.7319	3
58	0.6816	0.9314	1.0736	0.7318	2
59	0.6818	0.9320	1.0730	0.7316	1
60	0.6820	0.9325	1.0724	0.7314	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.6820	0.9325	1.0724	0.7314	60
1	0.6822	0.9331	1.0717	0.7312	59
2	0.6824	0.9336	1.0711	0.7310	58
3	0.6826	0.9341	1.0705	0.7308	57
4	0.6828	0.9347	1.0699	0.7306	56
5	0.6831	0.9352	1.0692	0.7304	55
6	0.6833	0.9358	1.0686	0.7302	54
7	0.6835	0.9363	1.0680	0.7300	53
8	0.6837	0.9369	1.0674	0.7298	52
9	0.6839	0.9374	1.0668	0.7296	51
10	0.6841	0.9380	1.0661	0.7294	50
11	0.6843	0.9385	1.0655	0.7292	49
12	0.6845	0.9391	1.0649	0.7290	48
13	0.6848	0.9396	1.0643	0.7288	47
14	0.6850	0.9402	1.0637	0.7286	46
15	0.6852	0.9407	1.0630	0.7284	45
16	0.6854	0.9413	1.0624	0.7282	44
17	0.6856	0.9418	1.0618	0.7280	43
18	0.6858	0.9424	1.0612	0.7278	42
19	0.6860	0.9429	1.0606	0.7276	41
20	0.6862	0.9435	1.0599	0.7274	40
21	0.6865	0.9440	1.0593	0.7272	39
22	0.6867	0.9446	1.0587	0.7270	38
23	0.6869	0.9451	1.0581	0.7268	37
24	0.6871	0.9457	1.0575	0.7266	36
25	0.6873	0.9462	1.0569	0.7264	35
26	0.6875	0.9468	1.0562	0.7262	34
27	0.6877	0.9473	1.0556	0.7260	33
28	0.6879	0.9479	1.0550	0.7258	32
29	0.6881	0.9484	1.0544	0.7256	31
30	0.6884	0.9490	1.0538	0.7254	30
31	0.6886	0.9495	1.0532	0.7252	29
32	0.6888	0.9501	1.0526	0.7250	28
33	0.6890	0.9506	1.0519	0.7248	27
34	0.6892	0.9512	1.0513	0.7246	26
35	0.6894	0.9517	1.0507	0.7244	25
36	0.6896	0.9523	1.0501	0.7242	24
37	0.6898	0.9528	1.0495	0.7240	23
38	0.6900	0.9534	1.0489	0.7238	22
39	0.6903	0.9540	1.0483	0.7236	21
40	0.6905	0.9545	1.0477	0.7234	20
41	0.6907	0.9551	1.0470	0.7232	19
42	0.6909	0.9556	1.0464	0.7230	18
43	0.6911	0.9562	1.0458	0.7228	17
44	0.6913	0.9567	1.0452	0.7226	16
45	0.6915	0.9573	1.0446	0.7224	15
46	0.6917	0.9578	1.0440	0.7222	14
47	0.6919	0.9584	1.0434	0.7220	13
48	0.6921	0.9590	1.0428	0.7218	12
49	0.6924	0.9595	1.0422	0.7216	11
50	0.6926	0.9601	1.0416	0.7214	10
51	0.6928	0.9606	1.0410	0.7212	9
52	0.6930	0.9612	1.0404	0.7210	8
53	0.6932	0.9618	1.0398	0.7208	7
54	0.6934	0.9623	1.0392	0.7206	6
55	0.6936	0.9629	1.0385	0.7203	5
56	0.6938	0.9634	1.0379	0.7201	4
57	0.6940	0.9640	1.0373	0.7199	3
58	0.6942	0.9646	1.0367	0.7197	2
59	0.6944	0.9651	1.0361	0.7195	1
60	0.6947	0.9657	1.0355	0.7193	0
	Cos	Cot	Tan	Sin	

	Sin	Tan	Cot	Cos	
0	0.6947	0.9657	1.0355	0.7193	60
1	0.6949	0.9663	1.0349	0.7191	59
2	0.6951	0.9668	1.0343	0.7189	58
3	0.6953	0.9674	1.0337	0.7187	57
4	0.6955	0.9679	1.0331	0.7185	56
5	0.6957	0.9685	1.0325	0.7183	55
6	0.6959	0.9691	1.0319	0.7181	54
7	0.6961	0.9696	1.0313	0.7179	53
8	0.6963	0.9702	1.0307	0.7177	52
9	0.6965	0.9708	1.0301	0.7175	51
10	0.6967	0.9713	1.0295	0.7173	50
11	0.6970	0.9719	1.0289	0.7171	49
12	0.6972	0.9725	1.0283	0.7169	48
13	0.6974	0.9730	1.0277	0.7167	47
14	0.6976	0.9736	1.0271	0.7165	46
15	0.6978	0.9742	1.0265	0.7163	45
16	0.6980	0.9747	1.0259	0.7161	44
17	0.6982	0.9753	1.0253	0.7159	43
18	0.6984	0.9759	1.0247	0.7157	42
19	0.6986	0.9764	1.0241	0.7155	41
20	0.6988	0.9770	1.0235	0.7153	40
21	0.6990	0.9776	1.0230	0.7151	39
22	0.6992	0.9781	1.0224	0.7149	38
23	0.6995	0.9787	1.0218	0.7147	37
24	0.6997	0.9793	1.0212	0.7145	36
25	0.6999	0.9798	1.0206	0.7143	35
26	0.7001	0.9804	1.0200	0.7141	34
27	0.7003	0.9810	1.0194	0.7139	33
28	0.7005	0.9816	1.0188	0.7137	32
29	0.7007	0.9821	1.0182	0.7135	31
30	0.7009	0.9827	1.0176	0.7133	30
31	0.7011	0.9833	1.0170	0.7130	29
32	0.7013	0.9838	1.0164	0.7128	28
33	0.7015	0.9844	1.0158	0.7126	27
34	0.7017	0.9850	1.0152	0.7124	26
35	0.7019	0.9856	1.0147	0.7122	25
36	0.7022	0.9861	1.0141	0.7120	24
37	0.7024	0.9867	1.0135	0.7118	23
38	0.7026	0.9873	1.0129	0.7116	22
39	0.7028	0.9879	1.0123	0.7114	21
40	0.7030	0.9884	1.0117	0.7112	20
41	0.7032	0.9890	1.0111	0.7110	19
42	0.7034	0.9896	1.0105	0.7108	18
43	0.7036	0.9902	1.0099	0.7106	17
44	0.7038	0.9907	1.0094	0.7104	16
45	0.7040	0.9913	1.0088	0.7102	15
46	0.7042	0.9919	1.0082	0.7100	14
47	0.7044	0.9925	1.0076	0.7098	13
48	0.7046	0.9930	1.0070	0.7096	12
49	0.7048	0.9936	1.0064	0.7094	11
50	0.7050	0.9942	1.0058	0.7092	10
51	0.7053	0.9948	1.0052	0.7090	9
52	0.7055	0.9954	1.0047	0.7088	8
53	0.7057	0.9959	1.0041	0.7085	7
54	0.7059	0.9965	1.0035	0.7083	6
55	0.7061	0.9971	1.0029	0.7081	5
56	0.7063	0.9977	1.0023	0.7079	4
57	0.7065	0.9983	1.0017	0.7077	3
58	0.7067	0.9988	1.0012	0.7075	2
59	0.7069	0.9994	1.0006	0.7073	1
60	0.7071	1.0000	1.0000	0.7071	0
	Cos	Cot	Tan	Sin	

Valores e logaritmos de “Haversines”

[As características dos logaritmos são omitidas]
Determine pela regra os seus valores

N. T.

Entre os autores norte-americanos e ingleses é usual o aparecimento da expressão «haversines» que exprime o seguinte :

$$\text{hav } x = \frac{1}{2} (1 - \cos x) \text{ (haversine)}$$

°	0' Log ₁₀	10' Log ₁₀	20' Log ₁₀	30' Log ₁₀	40' Log ₁₀	50' Log ₁₀
0	.0000	.0000 4.3254	.0000 4.9275	.0000 5.2796	.0000 5.5295	.0001 5.7223
1	.0001 5.8817	.0001 6.0156	.0001 6.1315	.0002 .2338	.0002 .3254	.0003 .4081
2	.0003 .4837	.0004 .5532	.0004 .6176	.0005 .6775	.0005 .7336	.0006 .7862
3	.0007 .8358	.0008 .8828	.0008 .9273	.0009 .9697	.0010 .0101	.0011 .0487
4	.0012 .0856	.0013 .1211	.0014 .1551	.0015 .1879	.0017 .2195	.0018 .2499
5	.0019 .2793	.0020 .3078	.0022 .3354	.0023 .3621	.0024 .3880	.0026 .4132
6	.0027 .4376	.0029 .4614	.0031 .4845	.0032 .5071	.0034 .5290	.0036 .5504
7	.0037 .5713	.0039 .5918	.0041 .6117	.0043 .6312	.0045 .6503	.0047 .6689
8	.0049 .6872	.0051 .7051	.0053 .7226	.0055 .7397	.0057 .7566	.0059 .7731
9	.0062 .7893	.0064 .8052	.0066 .8208	.0069 .8361	.0071 .8512	.0073 .8660
10	.0076 .8806	.0079 .8949	.0081 .9090	.0084 .9229	.0086 .9365	.0089 .9499
11	.0092 .9631	.0095 .9762	.0097 .9890	.0100 .0016	.0103 .0141	.0106 .0264
12	.0109 .0385	.0112 .0504	.0115 .0622	.0119 .0738	.0122 .0853	.0125 .0966
13	.0128 .1077	.0131 .1187	.0135 .1296	.0138 .1404	.0142 .1510	.0145 .1614
14	.0149 .1718	.0152 .1820	.0156 .1921	.0159 .2021	.0163 .2120	.0167 .2218
15	.0170 .2314	.0174 .2409	.0178 .2504	.0182 .2597	.0186 .2689	.0190 .2781
16	.0194 .2871	.0198 .2961	.0202 .3049	.0206 .3137	.0210 .3223	.0214 .3309
17	.0218 .3394	.0223 .3478	.0227 .3561	.0231 .3644	.0236 .3726	.0240 .3806
18	.0245 .3887	.0249 .3966	.0254 .4045	.0258 .4123	.0263 .4200	.0268 .4276
19	.0272 .4352	.0277 .4427	.0282 .4502	.0287 .4576	.0292 .4649	.0297 .4721
20	.0302 .4793	.0307 .4865	.0312 .4936	.0317 .5006	.0322 .5075	.0327 .5144
21	.0332 .5213	.0337 .5281	.0343 .5348	.0348 .5415	.0353 .5481	.0359 .5547
22	.0364 .5612	.0370 .5677	.0375 .5741	.0381 .5805	.0386 .5868	.0392 .5931
23	.0397 .5993	.0403 .6055	.0409 .6116	.0415 .6177	.0421 .6238	.0426 .6298
24	.0432 .6357	.0438 .6417	.0444 .6476	.0450 .6534	.0456 .6592	.0462 .6650
25	.0468 .6707	.0475 .6764	.0481 .6820	.0487 .6876	.0493 .6932	.0500 .6987
26	.0506 .7042	.0512 .7096	.0519 .7151	.0525 .7204	.0532 .7258	.0538 .7311
27	.0545 .7364	.0552 .7416	.0558 .7468	.0565 .7520	.0572 .7572	.0578 .7623
28	.0585 .7673	.0592 .7724	.0599 .7774	.0606 .7824	.0613 .7874	.0620 .7923
29	.0627 .7972	.0634 .8020	.0641 .8069	.0648 .8117	.0655 .8165	.0663 .8213
30	.0670 .8260	.0677 .8307	.0684 .8354	.0692 .8400	.0699 .8446	.0707 .8492
31	.0714 .8538	.0722 .8583	.0729 .8629	.0737 .8673	.0744 .8718	.0752 .8763
32	.0760 .8807	.0767 .8851	.0775 .8894	.0783 .8938	.0791 .8981	.0799 .9024
33	.0807 .9067	.0815 .9109	.0823 .9152	.0831 .9194	.0839 .9236	.0847 .9277
34	.0855 .9319	.0863 .9360	.0871 .9401	.0879 .9442	.0888 .9482	.0896 .9523
35	.0904 .9563	.0913 .9603	.0921 .9643	.0929 .9682	.0938 .9722	.0946 .9761
36	.0955 .9800	.0963 .9838	.0972 .9877	.0981 .9915	.0989 .9954	.0998 .9992
37	.1007 .0030	.1016 .0067	.1024 .0105	.1033 .0142	.1042 .0179	.1051 .0216
38	.1060 .0253	.1069 .0289	.1078 .0326	.1087 .0362	.1096 .0398	.1105 .0434
39	.1114 .0470	.1123 .0505	.1133 .0541	.1142 .0576	.1151 .0611	.1160 .0646
40	.1170 .0681	.1179 .0716	.1189 .0750	.1198 .0784	.1207 .0817	.1217 .0853
41	.1226 .0887	.1236 .0920	.1246 .0954	.1255 .0987	.1265 .1021	.1275 .1054
42	.1284 .1087	.1294 .1119	.1304 .1152	.1314 .1185	.1323 .1217	.1333 .1249
43	.1343 .1282	.1353 .1314	.1363 .1345	.1373 .1377	.1383 .1409	.1393 .1440
44	.1403 .1472	.1413 .1503	.1424 .1534	.1434 .1565	.1444 .1596	.1454 .1626
45	.1464 .1657	.1475 .1687	.1485 .1718	.1495 .1748	.1506 .1778	.1516 .1808
46	.1527 .1838	.1538 .1867	.1548 .1897	.1558 .1926	.1569 .1956	.1579 .1985
47	.1590 .2014	.1600 .2043	.1611 .2072	.1622 .2101	.1633 .2129	.1644 .2158
48	.1654 .2186	.1665 .2215	.1676 .2243	.1687 .2271	.1698 .2299	.1709 .2327
49	.1720 .2355	.1731 .2382	.1742 .2410	.1753 .2437	.1764 .2465	.1775 .2492
50	.1786 .2519	.1797 .2546	.1808 .2573	.1820 .2600	.1831 .2627	.1842 .2653
51	.1853 .2680	.1865 .2706	.1876 .2732	.1887 .2759	.1899 .2785	.1910 .2811
52	.1922 .2837	.1933 .2863	.1945 .2888	.1956 .2914	.1968 .2940	.1979 .2965
53	.1991 .2991	.2003 .3016	.2014 .3041	.2026 .3066	.2038 .3091	.2049 .3116
54	.2061 .3141	.2073 .3166	.2085 .3190	.2096 .3215	.2108 .3239	.2120 .3264
55	.2132 .3288	.2144 .3312	.2156 .3336	.2168 .3361	.2180 .3384	.2192 .3408
56	.2204 .3432	.2216 .3456	.2228 .3480	.2240 .3503	.2252 .3527	.2265 .3550
57	.2277 .3573	.2289 .3596	.2301 .3620	.2314 .3643	.2326 .3666	.2338 .3689
58	.2350 .3711	.2363 .3734	.2375 .3757	.2388 .3779	.2400 .3802	.2412 .3824
59	.2425 .3847	.2437 .3869	.2450 .3891	.2462 .3913	.2475 .3935	.2487 .3957

	0' Log ₁₀	10' Log ₁₀	20' Log ₁₀	30' Log ₁₀	40' Log ₁₀	50' Log ₁₀						
60	.2500	.3979	.2513	.4001	.2525	.4023	.2538	.4045	.2551	.4066	.2563	.4088
61	.2576	.4109	.2589	.4131	.2601	.4152	.2614	.4173	.2627	.4195	.2640	.4216
62	.2653	.4237	.2665	.4258	.2678	.4279	.2691	.4300	.2704	.4320	.2717	.4341
63	.2730	.4362	.2743	.4382	.2756	.4403	.2769	.4423	.2782	.4444	.2795	.4464
64	.2808	.4484	.2821	.4504	.2834	.4524	.2847	.4545	.2861	.4565	.2874	.4584
65	.2887	.4604	.2900	.4624	.2913	.4644	.2927	.4664	.2940	.4683	.2953	.4703
66	.2966	.4722	.2980	.4742	.2993	.4761	.3006	.4780	.3020	.4799	.3033	.4819
67	.3046	.4838	.3060	.4857	.3073	.4876	.3087	.4895	.3100	.4914	.3113	.4932
68	.3127	.4951	.3140	.4970	.3154	.4989	.3167	.5007	.3181	.5026	.3195	.5044
69	.3208	.5063	.3222	.5081	.3235	.5099	.3249	.5117	.3263	.5136	.3276	.5154
70	.3290	.5172	.3304	.5190	.3317	.5208	.3331	.5226	.3345	.5244	.3358	.5261
71	.3372	.5279	.3386	.5297	.3400	.5314	.3413	.5332	.3427	.5349	.3441	.5367
72	.3455	.5384	.3469	.5402	.3483	.5419	.3496	.5436	.3510	.5454	.3524	.5471
73	.3538	.5488	.3552	.5505	.3566	.5522	.3580	.5539	.3594	.5556	.3608	.5572
74	.3622	.5589	.3636	.5606	.3650	.5623	.3664	.5639	.3678	.5656	.3692	.5672
75	.3706	.5689	.3720	.5705	.3734	.5722	.3748	.5738	.3762	.5754	.3776	.5771
76	.3790	.5787	.3805	.5803	.3819	.5819	.3833	.5835	.3847	.5851	.3861	.5867
77	.3875	.5883	.3889	.5899	.3904	.5915	.3918	.5930	.3932	.5946	.3946	.5962
78	.3960	.5977	.3975	.5993	.3989	.6009	.4003	.6024	.4017	.6039	.4032	.6055
79	.4046	.6070	.4060	.6085	.4075	.6101	.4089	.6116	.4103	.6131	.4117	.6146
80	.4132	.6161	.4146	.6176	.4160	.6191	.4175	.6206	.4189	.6221	.4203	.6236
81	.4218	.6251	.4232	.6266	.4247	.6280	.4261	.6295	.4275	.6310	.4290	.6324
82	.4304	.6339	.4319	.6353	.4333	.6368	.4347	.6382	.4362	.6397	.4376	.6411
83	.4391	.6425	.4405	.6440	.4420	.6454	.4434	.6468	.4448	.6482	.4463	.6496
84	.4477	.6510	.4492	.6524	.4506	.6538	.4521	.6552	.4535	.6566	.4550	.6580
85	.4564	.6594	.4579	.6607	.4593	.6621	.4608	.6635	.4622	.6649	.4637	.6662
86	.4651	.6676	.4666	.6689	.4680	.6703	.4695	.6716	.4709	.6730	.4724	.6743
87	.4738	.6756	.4753	.6770	.4767	.6783	.4782	.6796	.4796	.6809	.4811	.6822
88	.4826	.6835	.4840	.6848	.4855	.6862	.4869	.6875	.4884	.6887	.4898	.6900
89	.4913	.6913	.4937	.6926	.4942	.6939	.4956	.6952	.4971	.6964	.4985	.6977
90	.5000	.6990	.5015	.7002	.5029	.7015	.5044	.7027	.5058	.7040	.5073	.7052
91	.5087	.7065	.5102	.7077	.5116	.7090	.5131	.7102	.5145	.7114	.5160	.7126
92	.5174	.7139	.5189	.7151	.5204	.7163	.5218	.7175	.5233	.7187	.5247	.7199
93	.5262	.7211	.5276	.7223	.5291	.7235	.5305	.7247	.5320	.7259	.5334	.7271
94	.5349	.7283	.5363	.7294	.5378	.7306	.5392	.7318	.5407	.7329	.5421	.7341
95	.5436	.7353	.5450	.7364	.5465	.7376	.5479	.7387	.5494	.7399	.5508	.7410
96	.5523	.7421	.5537	.7433	.5552	.7444	.5566	.7455	.5580	.7467	.5595	.7478
97	.5609	.7489	.5624	.7500	.5638	.7511	.5653	.7523	.5667	.7534	.5682	.7545
98	.5696	.7556	.5710	.7567	.5725	.7577	.5739	.7588	.5753	.7599	.5768	.7610
99	.5782	.7621	.5797	.7632	.5811	.7642	.5825	.7653	.5840	.7664	.5854	.7674
100	.5868	.7685	.5883	.7696	.5897	.7706	.5911	.7717	.5925	.7727	.5940	.7738
101	.5954	.7748	.5968	.7759	.5983	.7769	.5997	.7779	.6011	.7790	.6025	.7800
102	.6040	.7810	.6054	.7820	.6068	.7830	.6082	.7841	.6096	.7851	.6111	.7861
103	.6125	.7871	.6139	.7881	.6153	.7891	.6167	.7901	.6181	.7911	.6195	.7921
104	.6210	.7931	.6224	.7940	.6238	.7950	.6252	.7960	.6266	.7970	.6280	.7980
105	.6294	.7989	.6308	.7999	.6322	.8009	.6336	.8018	.6350	.8028	.6364	.8037
106	.6378	.8047	.6392	.8056	.6406	.8066	.6420	.8075	.6434	.8085	.6448	.8094
107	.6462	.8104	.6476	.8113	.6490	.8122	.6504	.8131	.6517	.8141	.6531	.8150
108	.6545	.8159	.6559	.8168	.6573	.8177	.6587	.8187	.6600	.8196	.6614	.8205
109	.6628	.8214	.6642	.8223	.6655	.8232	.6669	.8241	.6683	.8250	.6696	.8258
110	.6710	.8267	.6724	.8276	.6737	.8285	.6751	.8294	.6765	.8302	.6778	.8311
111	.6792	.8320	.6805	.8329	.6819	.8337	.6833	.8346	.6846	.8354	.6860	.8363
112	.6873	.8371	.6887	.8380	.6900	.8388	.6913	.8397	.6927	.8405	.6940	.8414
113	.6954	.8422	.6967	.8430	.6980	.8439	.6994	.8447	.7007	.8455	.7020	.8464
114	.7034	.8472	.7047	.8480	.7060	.8488	.7073	.8496	.7087	.8504	.7100	.8513
115	.7113	.8521	.7126	.8529	.7139	.8537	.7153	.8545	.7166	.8553	.7179	.8561
116	.7192	.8568	.7205	.8576	.7218	.8584	.7231	.8592	.7244	.8600	.7257	.8608
117	.7270	.8615	.7283	.8623	.7296	.8631	.7309	.8638	.7322	.8646	.7335	.8654
118	.7347	.8661	.7360	.8669	.7373	.8676	.7386	.8684	.7399	.8691	.7411	.8699
119	.7424	.8706	.7437	.8714	.7449	.8721	.7462	.8729	.7475	.8736	.7487	.8743

	0'		10'		20'		30'		40'		50'	
	Logis		Logis		Logis		Logis		Logis		Logis	
120	.7500	.8751	.7513	.8758	.7525	.8765	.7538	.8772	.7550	.8780	.7563	.8787
121	.7575	.8794	.7588	.8801	.7600	.8808	.7612	.8815	.7625	.8822	.7637	.8829
122	.7650	.8836	.7662	.8843	.7674	.8850	.7686	.8857	.7699	.8864	.7711	.8871
123	.7723	.8878	.7735	.8885	.7748	.8892	.7760	.8898	.7772	.8905	.7784	.8912
124	.7796	.8919	.7808	.8925	.7820	.8932	.7832	.8939	.7844	.8945	.7856	.8952
125	.7868	.8959	.7880	.8965	.7892	.8972	.7904	.8978	.7915	.8985	.7927	.8991
126	.7939	.8998	.7951	.9004	.7962	.9010	.7974	.9017	.7986	.9023	.7997	.9030
127	.8009	.9036	.8021	.9042	.8032	.9048	.8044	.9055	.8055	.9061	.8067	.9067
128	.8078	.9073	.8090	.9079	.8101	.9085	.8113	.9092	.8124	.9098	.8135	.9104
129	.8147	.9110	.8158	.9116	.8169	.9122	.8180	.9128	.8192	.9134	.8203	.9140
130	.8214	.9146	.8225	.9151	.8236	.9157	.8247	.9163	.8258	.9169	.8269	.9175
131	.8280	.9180	.8291	.9186	.8302	.9192	.8313	.9198	.8324	.9203	.8335	.9209
132	.8346	.9215	.8356	.9220	.8367	.9226	.8378	.9231	.8389	.9237	.8399	.9242
133	.8410	.9248	.8421	.9253	.8431	.9259	.8442	.9264	.8452	.9270	.8463	.9275
134	.8473	.9281	.8484	.9286	.8494	.9291	.8501	.9297	.8515	.9302	.8525	.9307
135	.8536	.9312	.8546	.9318	.8556	.9323	.8566	.9328	.8576	.9333	.8587	.9338
136	.8597	.9343	.8607	.9348	.8617	.9353	.8627	.9359	.8637	.9364	.8647	.9369
137	.8657	.9374	.8667	.9379	.8677	.9383	.8686	.9388	.8696	.9393	.8706	.9398
138	.8716	.9403	.8725	.9408	.8735	.9413	.8745	.9417	.8754	.9422	.8764	.9427
139	.8774	.9432	.8783	.9436	.8793	.9441	.8802	.9446	.8811	.9450	.8821	.9455
140	.8830	.9460	.8840	.9464	.8849	.9469	.8858	.9473	.8867	.9478	.8877	.9482
141	.8886	.9487	.8895	.9491	.8904	.9496	.8913	.9500	.8922	.9505	.8931	.9509
142	.8940	.9513	.8949	.9518	.8958	.9522	.8967	.9526	.8976	.9531	.8984	.9535
143	.8993	.9539	.9002	.9543	.9011	.9548	.9019	.9552	.9028	.9556	.9037	.9560
144	.9045	.9564	.9054	.9568	.9062	.9572	.9071	.9576	.9079	.9580	.9087	.9584
145	.9096	.9588	.9104	.9592	.9112	.9596	.9121	.9600	.9129	.9604	.9137	.9608
146	.9145	.9612	.9153	.9616	.9161	.9620	.9169	.9623	.9177	.9627	.9185	.9631
147	.9193	.9635	.9201	.9638	.9209	.9642	.9217	.9646	.9225	.9650	.9233	.9653
148	.9240	.9657	.9248	.9660	.9256	.9664	.9263	.9668	.9271	.9671	.9278	.9675
149	.9286	.9678	.9293	.9682	.9301	.9685	.9308	.9689	.9316	.9692	.9323	.9695
150	.9330	.9699	.9337	.9702	.9345	.9706	.9352	.9709	.9359	.9712	.9366	.9716
151	.9373	.9719	.9380	.9722	.9387	.9725	.9394	.9729	.9401	.9732	.9408	.9735
152	.9415	.9738	.9422	.9741	.9428	.9744	.9435	.9747	.9442	.9751	.9448	.9754
153	.9455	.9757	.9462	.9760	.9468	.9763	.9475	.9766	.9481	.9769	.9488	.9772
154	.9494	.9774	.9500	.9777	.9507	.9780	.9513	.9783	.9519	.9786	.9525	.9789
155	.9532	.9792	.9538	.9794	.9544	.9797	.9550	.9800	.9556	.9803	.9562	.9805
156	.9568	.9808	.9574	.9811	.9579	.9813	.9585	.9816	.9591	.9819	.9597	.9821
157	.9603	.9824	.9608	.9826	.9614	.9829	.9619	.9831	.9625	.9834	.9630	.9836
158	.9636	.9839	.9641	.9841	.9647	.9844	.9652	.9846	.9657	.9849	.9663	.9851
159	.9668	.9853	.9673	.9856	.9678	.9858	.9683	.9860	.9688	.9863	.9693	.9865
160	.9698	.9867	.9703	.9869	.9708	.9871	.9713	.9874	.9718	.9876	.9723	.9878
161	.9728	.9880	.9732	.9882	.9737	.9884	.9742	.9886	.9746	.9888	.9751	.9890
162	.9755	.9892	.9760	.9894	.9764	.9896	.9769	.9898	.9773	.9900	.9777	.9902
163	.9782	.9904	.9786	.9906	.9790	.9908	.9794	.9910	.9798	.9911	.9802	.9913
164	.9806	.9915	.9810	.9917	.9814	.9919	.9818	.9920	.9822	.9922	.9826	.9923
165	.9830	.9925	.9833	.9927	.9837	.9929	.9841	.9930	.9844	.9932	.9848	.9933
166	.9851	.9935	.9855	.9937	.9858	.9938	.9862	.9940	.9865	.9941	.9869	.9943
167	.9872	.9944	.9875	.9945	.9878	.9947	.9881	.9948	.9885	.9950	.9888	.9951
168	.9891	.9952	.9894	.9954	.9897	.9955	.9900	.9956	.9903	.9957	.9905	.9959
169	.9908	.9960	.9911	.9961	.9914	.9962	.9916	.9963	.9919	.9965	.9921	.9966
170	.9924	.9967	.9927	.9968	.9929	.9969	.9931	.9970	.9934	.9971	.9936	.9972
171	.9938	.9973	.9941	.9974	.9943	.9975	.9945	.9976	.9947	.9977	.9949	.9978
172	.9951	.9979	.9953	.9980	.9955	.9981	.9957	.9981	.9959	.9982	.9961	.9983
173	.9963	.9984	.9964	.9984	.9966	.9985	.9968	.9986	.9969	.9987	.9971	.9987
174	.9973	.9988	.9974	.9988	.9976	.9989	.9977	.9990	.9978	.9991	.9980	.9991
175	.9981	.9992	.9982	.9992	.9983	.9993	.9985	.9993	.9986	.9994	.9987	.9994
176	.9988	.9995	.9989	.9995	.9990	.9996	.9991	.9996	.9992	.9996	.9992	.9997
177	.9993	.9997	.9994	.9997	.9995	.9998	.9995	.9998	.9996	.9998	.9996	.9998
178	.9997	.9999	.9997	.9999	.9998	.9999	.9998	.9999	.9999	.9999	.9999	.9999
179	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.0000	1.0000	.0000

Potências e Raízes

No.	x ²	x ³	\sqrt{x}	$\sqrt[3]{x}$	No.	x ²	x ³	\sqrt{x}	$\sqrt[3]{x}$
1	1	1	1.000	1.000	51	2 601	132 651	7.141	3.708
2	4	8	1.414	1.260	52	2 704	140 608	7.211	3.733
3	9	27	1.732	1.442	53	2 809	148 877	7.280	3.756
4	16	64	2.000	1.587	54	2 916	157 464	7.348	3.780
5	25	125	2.236	1.710	55	3 025	166 375	7.416	3.803
6	36	216	2.449	1.817	56	3 136	175 616	7.483	3.826
7	49	343	2.646	1.913	57	3 249	185 193	7.550	3.849
8	64	512	2.828	2.000	58	3 364	195 112	7.616	3.871
9	81	729	3.000	2.080	59	3 481	205 379	7.681	3.893
10	100	1 000	3.162	2.154	60	3 600	216 000	7.746	3.915
11	121	1 331	3.317	2.224	61	3 721	226 981	7.810	3.936
12	144	1 728	3.464	2.289	62	3 844	238 328	7.874	3.958
13	169	2 197	3.606	2.351	63	3 969	250 047	7.937	3.979
14	196	2 744	3.742	2.410	64	4 096	262 144	8.000	4.000
15	225	3 375	3.873	2.466	65	4 225	274 625	8.062	4.021
16	256	4 096	4.000	2.520	66	4 356	287 496	8.124	4.041
17	289	4 913	4.123	2.571	67	4 489	300 763	8.185	4.062
18	324	5 832	4.243	2.621	68	4 624	314 432	8.246	4.082
19	361	6 859	4.359	2.668	69	4 761	328 509	8.307	4.102
20	400	8 000	4.472	2.714	70	4 900	343 000	8.367	4.121
21	441	9 261	4.583	2.759	71	5 041	357 911	8.426	4.141
22	484	10 648	4.690	2.802	72	5 184	373 248	8.485	4.160
23	529	12 167	4.796	2.844	73	5 329	389 017	8.544	4.179
24	576	13 824	4.899	2.884	74	5 476	405 224	8.602	4.198
25	625	15 625	5.000	2.924	75	5 625	421 875	8.660	4.217
26	676	17 576	5.099	2.962	76	5 776	438 976	8.718	4.236
27	729	19 683	5.196	3.000	77	5 929	456 533	8.775	4.254
28	784	21 952	5.292	3.037	78	6 084	474 552	8.832	4.273
29	841	24 389	5.385	3.072	79	6 241	493 039	8.888	4.291
30	900	27 000	5.477	3.107	80	6 400	512 000	8.944	4.309
31	961	29 791	5.568	3.141	81	6 561	531 441	9.000	4.327
32	1 024	32 768	5.657	3.175	82	6 724	551 368	9.055	4.344
33	1 089	35 937	5.745	3.208	83	6 889	571 787	9.110	4.362
34	1 156	39 304	5.831	3.240	84	7 056	592 704	9.165	4.380
35	1 225	42 875	5.916	3.271	85	7 225	614 125	9.220	4.397
36	1 296	46 656	6.000	3.302	86	7 396	636 056	9.274	4.414
37	1 369	50 653	6.083	3.332	87	7 569	658 503	9.327	4.431
38	1 444	54 872	6.164	3.362	88	7 744	681 472	9.381	4.448
39	1 521	59 319	6.245	3.391	89	7 921	704 969	9.434	4.465
40	1 600	64 000	6.325	3.420	90	8 100	729 000	9.487	4.481
41	1 681	68 921	6.403	3.448	91	8 281	753 571	9.539	4.498
42	1 764	74 088	6.481	3.476	92	8 464	778 688	9.592	4.514
43	1 849	79 507	6.557	3.503	93	8 649	804 357	9.644	4.531
44	1 936	85 184	6.633	3.530	94	8 836	830 584	9.695	4.547
45	2 025	91 125	6.708	3.557	95	9 025	857 375	9.747	4.563
46	2 116	97 336	6.782	3.583	96	9 216	884 736	9.798	4.579
47	2 209	103 823	6.856	3.609	97	9 409	912 673	9.849	4.595
48	2 304	110 592	6.928	3.634	98	9 604	941 192	9.899	4.610
49	2 401	117 649	7.000	3.659	99	9 801	970 299	9.950	4.626
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**Graus, minutos e segundos
a radianos**

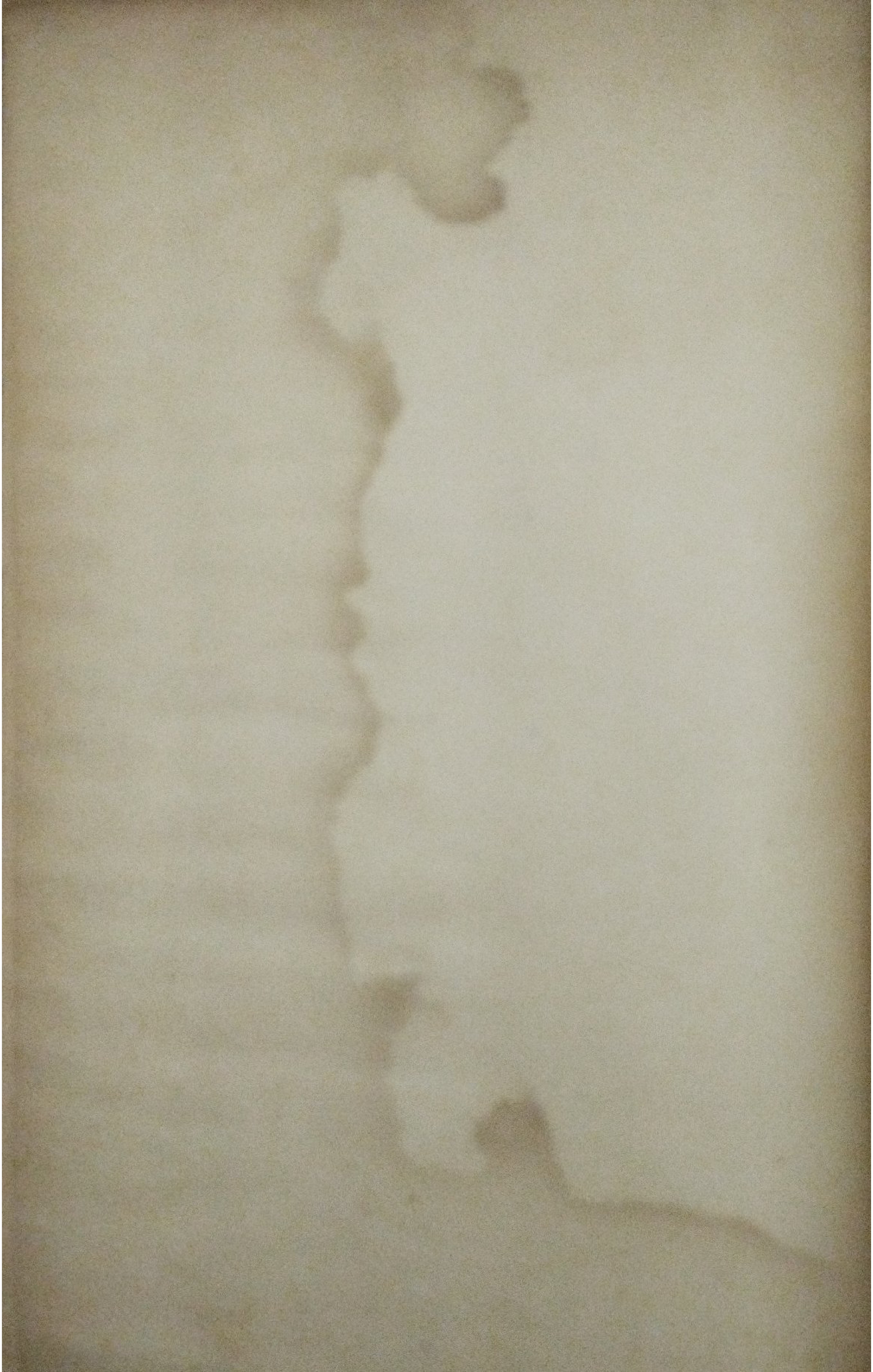
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2	0.03490 66	62	1.08210 41	122	2.12930 17	2	0.00058 18	2	0.00000 97
3	0.05235 99	63	1.09955 74	123	2.14675 50	3	0.00087 27	3	0.00001 45
4	0.06981 32	64	1.11701 07	124	2.16420 83	4	0.00116 36	4	0.00001 94
5	0.08726 65	65	1.13446 40	125	2.18166 16	5	0.00145 44	5	0.00002 42
6	0.10471 98	66	1.15191 73	126	2.19911 49	6	0.00174 53	6	0.00002 91
7	0.12217 30	67	1.16937 06	127	2.21656 82	7	0.00203 62	7	0.00003 39
8	0.13962 63	68	1.18682 39	128	2.23402 14	8	0.00232 71	8	0.00003 88
9	0.15707 96	69	1.20427 72	129	2.25147 47	9	0.00261 80	9	0.00004 36
10	0.17453 29	70	1.22173 05	130	2.26892 80	10	0.00290 89	10	0.00004 85
11	0.19198 62	71	1.23918 38	131	2.28638 13	11	0.00319 98	11	0.00005 33
12	0.20943 95	72	1.25663 71	132	2.30383 46	12	0.00349 07	12	0.00005 82
13	0.22689 28	73	1.27409 04	133	2.32128 79	13	0.00378 15	13	0.00006 30
14	0.24434 61	74	1.29154 36	134	2.33874 12	14	0.00407 24	14	0.00006 79
15	0.26179 94	75	1.30899 69	135	2.35619 45	15	0.00436 33	15	0.00007 27
16	0.27925 27	76	1.32645 02	136	2.37364 78	16	0.00465 42	16	0.00007 76
17	0.29670 60	77	1.34390 35	137	2.39110 11	17	0.00494 51	17	0.00008 24
18	0.31415 93	78	1.36135 68	138	2.40855 44	18	0.00523 60	18	0.00008 73
19	0.33161 26	79	1.37881 01	139	2.42600 77	19	0.00552 69	19	0.00009 21
20	0.34906 59	80	1.39626 34	140	2.44346 10	20	0.00581 78	20	0.00009 70
21	0.36651 91	81	1.41371 67	141	2.46091 42	21	0.00610 87	21	0.00010 18
22	0.38397 24	82	1.43117 00	142	2.47836 75	22	0.00639 95	22	0.00010 67
23	0.40142 57	83	1.44862 33	143	2.49582 08	23	0.00669 04	23	0.00011 15
24	0.41887 90	84	1.46607 66	144	2.51327 41	24	0.00698 13	24	0.00011 64
25	0.43633 23	85	1.48352 99	145	2.53072 74	25	0.00727 22	25	0.00012 12
26	0.45378 56	86	1.50098 32	146	2.54818 07	26	0.00756 31	26	0.00012 61
27	0.47123 89	87	1.51843 64	147	2.56563 40	27	0.00785 40	27	0.00013 09
28	0.48869 22	88	1.53588 97	148	2.58308 73	28	0.00814 49	28	0.00013 57
29	0.50614 55	89	1.55334 30	149	2.60054 06	29	0.00843 58	29	0.00014 06
30	0.52359 88	90	1.57079 63	150	2.61799 39	30	0.00872 66	30	0.00014 54
31	0.54105 21	91	1.58824 96	151	2.63544 72	31	0.00901 75	31	0.00015 03
32	0.55850 54	92	1.60570 29	152	2.65290 05	32	0.00930 84	32	0.00015 51
33	0.57595 87	93	1.62315 62	153	2.67035 38	33	0.00959 93	33	0.00016 00
34	0.59341 19	94	1.64060 95	154	2.68780 70	34	0.00989 02	34	0.00016 48
35	0.61086 52	95	1.65806 28	155	2.70526 03	35	0.01018 11	35	0.00016 97
36	0.62831 85	96	1.67551 61	156	2.72271 36	36	0.01047 20	36	0.00017 45
37	0.64577 18	97	1.69296 94	157	2.74016 69	37	0.01076 29	37	0.00017 94
38	0.66322 51	98	1.71042 27	158	2.75762 02	38	0.01105 38	38	0.00018 42
39	0.68067 84	99	1.72787 60	159	2.77507 35	39	0.01134 46	39	0.00018 91
40	0.69813 17	100	1.74532 93	160	2.79252 68	40	0.01163 55	40	0.00019 39
41	0.71558 50	101	1.76278 25	161	2.80998 01	41	0.01192 64	41	0.00019 88
42	0.73303 83	102	1.78023 58	162	2.82743 34	42	0.01221 73	42	0.00020 36
43	0.75049 16	103	1.79768 91	163	2.84488 67	43	0.01250 82	43	0.00020 85
44	0.76794 49	104	1.81514 24	164	2.86234 00	44	0.01279 91	44	0.00021 33
45	0.78539 82	105	1.83259 57	165	2.87979 33	45	0.01309 00	45	0.00021 82
46	0.80285 15	106	1.85004 90	166	2.89724 66	46	0.01338 09	46	0.00022 30
47	0.82030 47	107	1.86750 23	167	2.91469 99	47	0.01367 17	47	0.00022 79
48	0.83775 80	108	1.88495 56	168	2.93215 31	48	0.01396 26	48	0.00023 27
49	0.85521 13	109	1.90240 89	169	2.94960 64	49	0.01425 35	49	0.00023 76
50	0.87266 46	110	1.91986 22	170	2.96705 97	50	0.01454 44	50	0.00024 24
51	0.89011 79	111	1.93731 55	171	2.98451 30	51	0.01483 53	51	0.00024 73
52	0.90757 12	112	1.95476 88	172	3.00196 63	52	0.01512 62	52	0.00025 21
53	0.92502 45	113	1.97222 21	173	3.01941 96	53	0.01541 71	53	0.00025 70
54	0.94247 78	114	1.98967 53	174	3.03687 29	54	0.01570 80	54	0.00026 18
55	0.95993 11	115	2.00712 86	175	3.05432 62	55	0.01599 89	55	0.00026 66
56	0.97738 44	116	2.02458 19	176	3.07177 95	56	0.01628 97	56	0.00027 15
57	0.99483 77	117	2.04203 52	177	3.08923 28	57	0.01658 06	57	0.00027 63
58	1.01229 10	118	2.05948 85	178	3.10668 61	58	0.01687 15	58	0.00028 12
59	1.02974 43	119	2.07694 18	179	3.12413 94	59	0.01716 24	59	0.00028 60
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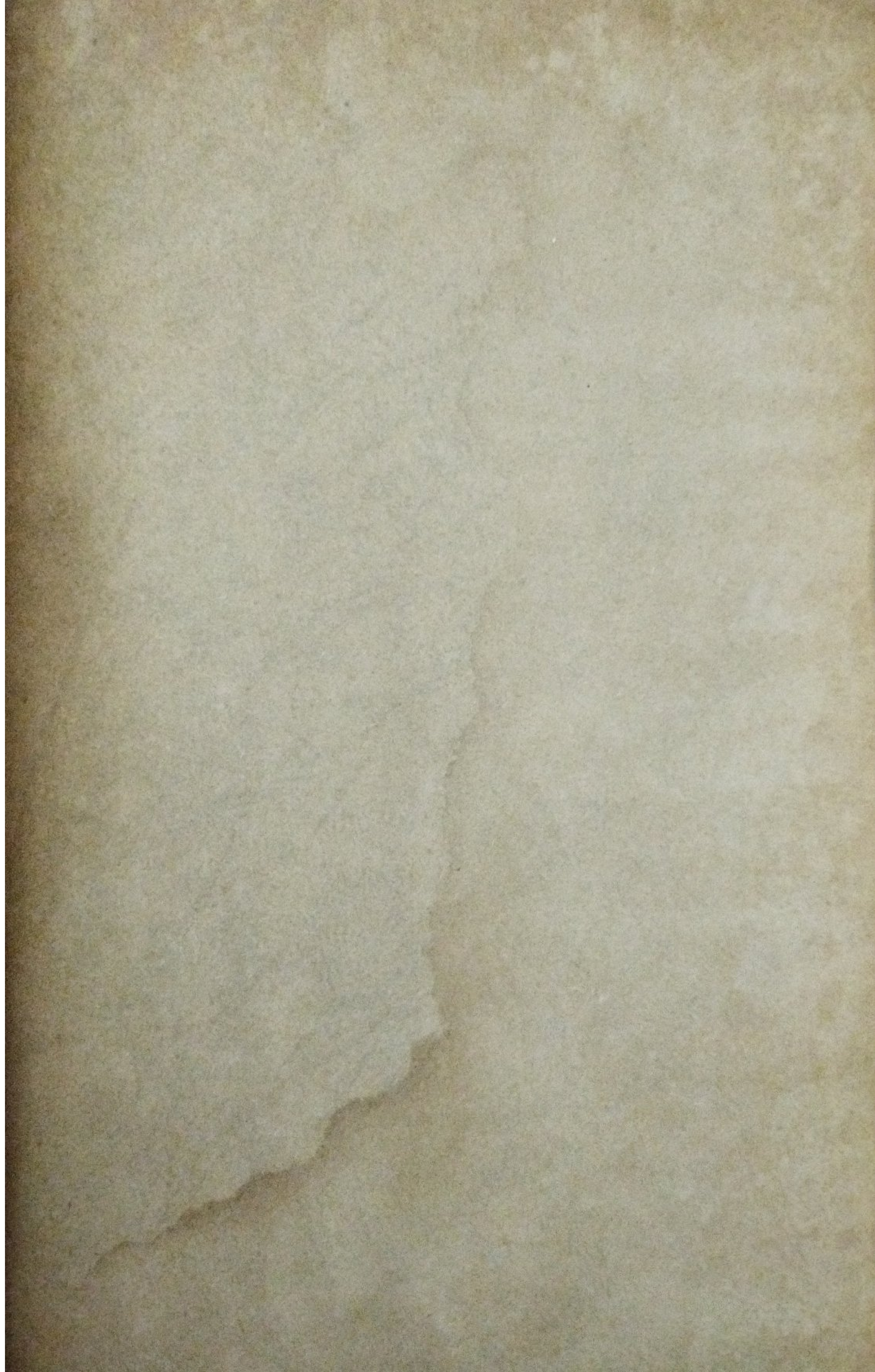
Radianos a Graus

Radianos	Décimos	Centésimos	Milésimos	Décimos milésimos
57°17'44".8	5°43'46".5	0°34'22".6	0° 3'26".3	0° 0'20".8
114°35'29".6	11°27'33".0	1° 8'45".3	0° 6'52".5	0° 0'41".3
171°53'14".4	17°11'19".4	1°43'07".9	0°10'18".8	0° 1'01".9
229°10'59".2	22°55'05".9	2°17'30".6	0°13'45".1	0° 1'22".5
286°28'44".0	28°38'52".4	2°51'53".2	0°17'11".3	0° 1'43".1
343°46'28".8	34°22'38".9	3°26'15".9	0°20'37".6	0° 2'03".8
401° 4'13".6	40° 6'25".4	4° 0'38".5	0°24'03".9	0° 2'24".4
458°21'58".4	45°50'11".8	4°35'01".2	0°27'30".1	0° 2'45".0
515°39'43".3	51°33'58".3	5° 9'23".8	0°30'56".4	0° 3'05".8

Radianos a Graus

	Radianos	Décimos	Centésimos	Milésimos	Décimos milésimos
1	57°17'44".8	5°43'46".5	0°34'22".6	0° 3'26".3	0° 0'20".6
2	114°35'29".6	11°27'33".0	1° 8'45".3	0° 6'52".5	0° 0'41".3
3	171°53'14".4	17°11'19".4	1°43'07".9	0°10'18".8	0° 1'01".9
4	229°10'59".2	22°55'05".9	2°17'30".6	0°13'45".1	0° 1'22".5
5	286°28'44".0	28°38'52".4	2°51'53".2	0°17'11".3	0° 1'43".1
6	343°46'28".8	34°22'38".9	3°26'15".9	0°20'37".6	0° 2'03".8
7	401° 4'13".6	40° 6'25".4	4° 0'38".5	0°24'03".9	0° 2'24".4
8	458°21'58".4	45°50'11".8	4°35'01".2	0°27'30".1	0° 2'45".0
9	515°39'43".3	51°33'58".3	5° 9'23".8	0°30'56".4	0° 3'05".6





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