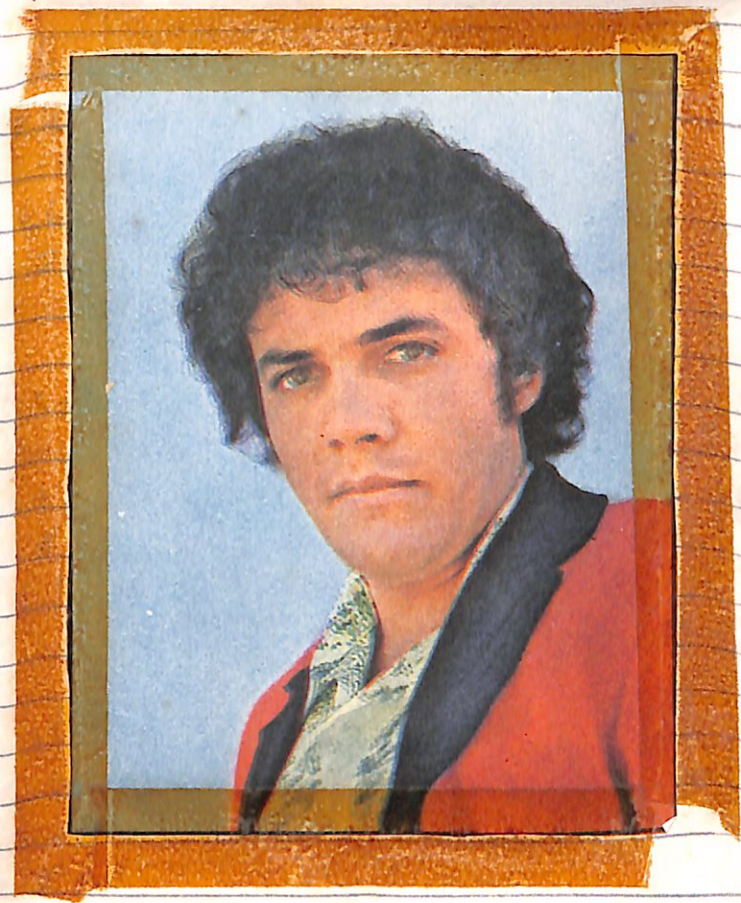


Deca-Cromo



MATEMATICA



Nº 5

ALUNA: DEMIPE L. MASHADO

3ª SÉRIE "Tudo aquilo que se faz,
seja na vida o que for,
sempre se faz mais perfeito
quando se faz com amor!"

Exercício 6-3-74.

Expressões com nos relativos.

$$\begin{aligned} \textcircled{1} & -2 - \{ -3 - [-4 + (-2+6) - (-3+4) - 5] - 6 \} + 8 = \\ & -2 - \{ -3 - [-4 + 2 + 6 + 5 - 4 - 5] - 6 \} + 8 = \\ & -2 - \{ -3 + 4 - 2 - 6 - 3 + 4 + 5 - 6 \} + 8 = \\ & + 2 + 3 - 4 + 2 + 6 + 3 - 4 - 5 + 6 + 8 = \\ & + 26 - 17 = + 9 \end{aligned}$$

//

$$\begin{aligned} \textcircled{2} & + 8 - \{ -2 - [-6 + (-3+4) - 2 - (-2+6) - 4] - 5 + 6 \} - 8 = \\ & + 8 - \{ -2 - [+6 - 3 - 4 + 2 + 2 + 6 - 4] - 5 + 6 \} - 8 = \\ & + 8 - \{ -2 + 6 + 3 + 4 - 2 - 2 + 6 + 4 + 5 - 6 \} - 8 = \\ & + 8 + 2 - 6 - 3 + 4 + 2 + 2 - 6 - 4 - 5 + 6 - 8 = \\ & + 7 - 21 = - 14 \end{aligned}$$

//

$$\begin{aligned} \textcircled{3} & + 9 + \{ + 6 + [- 2 + (- 3 + 2) - 4 + (- 3 - 4) - 5] - 2 \} + 6 = \\ & + 9 + \{ + 6 + [- 2 - 3 + 2 - 4 - 3 - 4 - 5] - 2 \} + 6 = \\ & + 9 + \{ + 6 - 2 - 3 + 2 - 4 - 3 - 4 - 5 - 2 \} + 6 = \\ & + 9 + 6 - 2 - 3 + 2 - 4 - 3 - 4 - 5 - 2 + 6 = \\ & + 21 - 21 = 0 \end{aligned}$$

//

Nºs relativos - multiplicação e Div.

1ª regra - Sinais iguais = (+)

$$\text{Ex.: } \begin{cases} (+8) \cdot (+2) = +16 \\ (-8) \cdot (-2) = +16 \\ (+8) \cdot (-2) = -16 \\ (-8) \cdot (+2) = -16 \end{cases}$$

//

2ª regra: Sinais diferentes = (-)

$$\text{Ex.: } \begin{cases} (-8) \cdot (-2) = +16 \\ (-8) \cdot (+2) = -16 \\ (+8) \cdot (-2) = -16 \\ (+8) \cdot (+2) = +16 \end{cases}$$

//

Exercícios:-

- ① $(-15) \div (-3) = +5$ e
- ② $(+8) \cdot (-7) = -56$ e
- ③ $-9 + 16 = +7$ e
- ④ $(-12) \cdot (+9) = -96$ e
- ⑤ $(-64) \div (-4) = +16$ e
- ⑥ $(-14) \cdot (+2) = -28$ e
- ⑦ $(+39) \div (-3) = -13$ e
- ⑧ $-16 + 18 = +2$ e
- ⑨ $-8 - 16 = -24$ e
- ⑩ $(+12) \cdot (-7) = -84$ e
- ⑪ $(-3) \cdot (+15) = -45$ e

- ⑫ $-6 - 8 + 9 = -7$
- ⑬ $(+12) \cdot (0) = 0$
- ⑭ $(0) \cdot (-15) = 0$
- ⑮ $-10 + 18 = +8$
- ⑯ $(-7) \div (-7) = +1$
- ⑰ $(-15) \cdot (-2) = +30$
- ⑱ $-9 + 6 = -3$
- ⑲ $(-18) \div (+6) = -3$
- ⑳ $(+36) \cdot (-2) = -72$
- ㉑ $(-8) \cdot (+5) = -40$
- ㉒ $(-19) \cdot (-3) = +57$
- ㉓ $-7 + 8 - 2 = -1$
- ㉔ $(-16) \div (-4) = +4$
- ㉕ $(+54) \cdot (0) = 0$

Nºs relativos - Potenciação

$(-2)^3 = (-2) \cdot (-2) \cdot (-2) = -8$ base negativa . expoente ímpar (-)

$(+2)^3 = (+2) \cdot (+2) \cdot (+2) = +8 \rightarrow$ base pos. expoente ímpar. (+)

$(+2)^2 = (+2) \cdot (+2) = +4 \rightarrow$ base pos. expoente par (+)

$(-2)^2 = (-2) \cdot (-2) = +4 \rightarrow$ base negativa expoente par (+)

1. $(-1)^{10} = +1$
2. $(+2)^4 = +16$
3. $(+1)^5 = +1$
4. $(-2)^6 = +64$
5. $(-5)^2 = +25$
6. $(-8)^2 = +64$
7. $(-3)^4 = +81$
8. $(+2)^5 = +32$
9. $(-9)^2 = +81$
10. $(-2)^5 = -32$
11. $(-6)^3 = -216$
12. $(+5)^3 = +125$
13. $(-10)^2 = +100$
14. $(-1)^{11} = -1$
15. $(-1)^{12} = +1$
16. $(+8-1)^2 = (+7)^2 = +49$
17. $(-3+4)^2 = (+1)^2 = +1$
18. $(-7+9)^3 = (+2)^3 = +8$
19. $(+6-4)^4 = (+2)^4 = +16$
20. $(-8+5)^3 = (-3)^3 = -27$

$$\begin{aligned}
 &(-3+5)^2 - (-3+4)^6 + (-2+5)^3 - (-1+5)^2 - (-1-1)^3 = \\
 &(+2)^2 - (+1)^6 + (+3)^3 - (+4)^2 - (-2)^3 = \\
 &(+4) - (+1) + (+27) - (+16) - (-8) = \\
 &+4 - 1 + 27 - 16 + 8 = \\
 &+39 - 17 = +22.
 \end{aligned}$$

$$\begin{aligned}
 &(+6-4)^3 - (-3-1)^2 - (-1-2)^3 + (+3-2)^5 - (-4+5)^6 = \\
 &(+2)^3 - (-4)^2 - (-3)^3 + (+1)^5 - (+1)^6 = \\
 &(+8) - (+16) - (-27) + (+1) - (+1) = \\
 &+8 - 16 + 27 + 1 - 1 = \\
 &+35 - 16 = +19.
 \end{aligned}$$

$$\begin{aligned}
 &(+3-2)^4 - (+7-5)^3 - (-2+4)^3 + (-5+7)^4 - (-2+3)^6 = \\
 &(+1)^4 - (+2)^3 - (+2)^3 + (+2)^4 - (+1)^6 = \\
 &(+1) - (+8) - (+8) + (+16) - (+1) = \\
 &+1 - 8 - 8 + 16 - 1 = \\
 &+16 - 16 = 0
 \end{aligned}$$

$$\begin{aligned}
 &2a^3 + 3a^2 - 5a + 6 \quad a=2 \\
 &2 \cdot 2^3 + 3 \cdot 2^2 - 5 \cdot 2 + 6 \\
 &2 \cdot 8 + 3 \cdot 4 - 10 + 6 \\
 &16 + 12 - 10 + 6 \\
 &+34 - 10 = +24 \\
 &V.N = +24
 \end{aligned}$$

$$\begin{aligned}
 &2x^2 - 3x + 1 \quad x=3 \\
 &2 \cdot 3^2 - 3 \cdot 3 + 1 \\
 &2 \cdot 9 - 9 + 1 \\
 &18 - 9 + 1 \\
 &19 - 9 = V.N = 10.
 \end{aligned}$$

$$\frac{-7}{3} x^2 y^3 z \quad \{x=1, y=-2, z=4\}$$

$$\frac{-7}{3} \cdot (1)^2 \cdot (-2)^3 \cdot (-4)$$

$$\frac{-7}{3} \cdot (1) \cdot (-8) \cdot (-4)$$

$$\frac{224}{3} \quad V.N = +80$$

$$\frac{3a^3 b^2}{c} \quad \{a=-1, b=2, c=3\}$$

$$3 \cdot (-1)^3 \cdot (2)^2$$

$$\frac{3 \cdot (-1) \cdot (4)}{3} = -4 \quad V.N = -4$$

$$\frac{5x^2 - 3xyz}{y z} \quad \{x=1, y=2, z=3\}$$

$$\frac{5 \cdot (1)^2 - 3 \cdot (1) \cdot (2)}{2 \cdot 3}$$

$$\frac{5 \cdot (1) - 3 \cdot (1) \cdot (2)}{2 \cdot 3}$$

$$\frac{5 - 6}{6} = \frac{-1}{2} = -\frac{1}{2}$$

$$2a^2 - 3\sqrt{a} b^3 \quad \{a=2, b=3\}$$

$$2 \cdot (2)^2 - 3 \cdot \sqrt{2} \cdot (3)^3$$

$$2 \cdot (4) - 3 \cdot \sqrt{2} \cdot (8)$$

$$8 - 3\sqrt{16}$$

$$8 - 3 \cdot 4$$

$$+8 - 12 = -4$$

$$V.N = -4$$

$$\frac{12x^2 \sqrt{y}}{12 \cdot (-\frac{2}{3})^2 \cdot \sqrt{4}} \quad \{x = -\frac{2}{3}, y = 4\}$$

$$12 \cdot (\frac{4}{9}) \cdot (\frac{2}{1}) = + \frac{96}{9} = + \frac{32}{3}$$

$$V.N = + \frac{32}{3}$$

$$\frac{a-b-c}{a-c} \quad a=-2, b=3, c=-5$$

$$\frac{(-2) - 3 - (-5)}{(-2) - (-5)} = \frac{-2 - 3 + 5}{-2 + 5} = \frac{0}{+3} = 0$$

$$V.N = 0$$

$$\frac{b-c-a}{b+c} \quad b=3, c=-5, a=-2$$

$$\frac{3 - (-5) - (-2)}{3 + (-5)} = \frac{3 + 5 + 2}{3 - 5} = \frac{+10}{-2} = -5$$

$$\frac{3x-4}{x+y} \quad \begin{matrix} x = -1 \\ y = -3 \end{matrix}$$

$$\frac{3 \cdot (-1) - (-3)}{(-1) + (-3)} = \frac{-3 + 3}{-1 - 3} = \frac{0}{-4} = 0 \quad V.N = 0$$

$$\frac{x-3y}{2x-1} \quad \begin{matrix} x = -1 \\ y = -3 \end{matrix}$$

$$\frac{(-1) - 3 \cdot (-3)}{2 \cdot (-1) - 1} = \frac{-1 + 9}{-2 - 1} = \frac{+8}{-3} = -\frac{8}{3} \quad V.N = -\frac{8}{3}$$

$$4x - 2y + 3 \quad x = -1, y = -3$$

$$4x - y - 1$$

$$4 \cdot (-1) - 2 \cdot (-3) + 3$$

$$4 \cdot (-1) - (-3) - 1$$

$$-4 + 6 + 3 =$$

$$-4 + 3 - 1 \quad \frac{+5}{-2} = -\frac{5}{2}$$

$$V.N = -\frac{5}{2}$$

$$x \cdot y - 3x + 1 \quad x = -11$$

$$y = -7$$

$$(-11) \cdot (-7) - 3 \cdot (-11) + 1$$

$$+77 + 33 + 1 = +111$$

$$V.N = +111$$

$$y - 3 \cdot x \cdot y + 3 \quad x = -11$$

$$y = -7$$

$$(-7) - 3 \cdot (-11) \cdot (-7) + 3$$

$$-7 - 231 + 3 =$$

$$-238 + 3 = V.N = -235$$

$$x \cdot y - 3x + 1 \quad x = -11$$

$$y - 3x \cdot y + 3 \quad y = -7$$

$$V.N = \frac{-111}{235}$$

$$6xy - 3x - 4y + 1 = \quad x = -\frac{1}{3}$$

$$3x - 2y - 3 \quad y = -\frac{1}{2}$$

$$6 \cdot \left(-\frac{1}{3}\right) \cdot \left(-\frac{1}{2}\right) - 3 \cdot \left(-\frac{1}{3}\right) - 4 \cdot \left(-\frac{1}{2}\right) + 1$$

$$3 \cdot \left(-\frac{1}{3}\right) - 2 \cdot \left(-\frac{1}{2}\right) - 3$$

$$+\frac{6}{6} + \frac{3}{3} + \frac{4}{2} + 1 \quad \frac{+1+1+2+1}{-1+1-3} = \frac{+5}{-3} = -\frac{5}{3}$$

$$-\frac{3}{3} + \frac{2}{2} - \frac{3}{1}$$

$$V.N = -\frac{5}{3}$$

$$3a^2 - b$$

$$a = 1, b = 3, c = 5$$

$$c - 3$$

$$\frac{3 \cdot (1)^2 - (3)}{(-5) - 3} = \frac{3 \cdot 1 - 3}{5 - 3} =$$

$$\frac{3 - 3}{2} = \frac{0}{2}$$

$$V.N = 0$$

$$3a^2 - b$$

$$a = 2, b = 5, c = 3$$

$$c - 3$$

$$\frac{3 \cdot (2)^2 - 5}{(3) - 3} =$$

$$\frac{3 \cdot 4 - 5}{3 - 3} = \frac{12 - 5}{0} = \frac{7}{0}$$

\bar{N} e' possibile divi. per 0

$$a) 3x - 1 = 5$$

$$3x = 5 + 1$$

$$3x = 6$$

$$x = 6 \div 3$$

$$x = 2.$$

$$b) 3x - 1 = 8$$

$$3x = 8 + 1$$

$$3x = 9$$

$$x = 9 \div 3$$

$$x = 3.$$

$$c) 3x - 1 = 4$$

$$3x = 4 + 1$$

$$3x = 5$$

$$x = 5 \div 3$$

$$x = \frac{5}{3}$$

$$d) 3x - 1 = 0$$

$$3x = 0 + 1$$

$$3x = 1$$

$$x = 1 \div 3.$$

$$x = \frac{1}{3}$$

$$(2x+1) \cdot (3x+2) = 0$$

$$2x+1=0 \quad | \quad 3x=0-2$$

$$2x=0-1 \quad | \quad 3x=-2$$

$$2x=-1 \quad | \quad x=-\frac{2}{3}$$

$$x=-\frac{1}{2}$$

$$x = -\frac{1}{2} \text{ ou } x = -\frac{2}{3}$$

Valores numéricos de expressões algébricas.

$$1. 4a^2b^3 - 3ab^2 + 5a^2b^2 + 6 \quad \{ a=2 \quad b=-1.$$

$$4 \cdot (2)^2 \cdot (-1)^3 - 3 \cdot (2) \cdot (-1)^2 + 5 \cdot (2)^2 \cdot (-1)^2 + 6.$$

$$4 \cdot (4) \cdot (-1) - 3 \cdot (2) \cdot (1) + 5 \cdot (4) \cdot (1) + 6$$

$$-16 - 6 + 20 + 6.$$

$$+20 - 16 = \text{V.N.} = +4$$

$$2) 2a^3b + 5a^2b - 4ab^2 - 3ab \quad \{ a=2 \quad b=1.$$

$$2 \cdot (2)^3 \cdot (-1) + 5 \cdot (2)^2 \cdot (-1) - 4 \cdot (2) \cdot (-1)^2 - 3 \cdot (2) \cdot (-1).$$

$$2 \cdot (8) \cdot (-1) + 5 \cdot (4) \cdot (-1) - 4 \cdot (2) \cdot (1) - 3 \cdot (2) \cdot (-1).$$

$$-16 - 20 - 8 + 6 =$$

$$\text{V.N.} = -50$$

$$3. 4a^2b^3 - 5ab^2 + 6a^2b^2 - 2ab \quad \{ a=-1 \quad b=-2.$$

$$4 \cdot (-1)^2 \cdot (-2)^3 - 5 \cdot (-1) \cdot (-2)^2 + 6 \cdot (-1)^2 \cdot (-2)^2 - 2 \cdot (-1) \cdot (-2)$$

$$4 \cdot (1) \cdot (-8) - 5 \cdot (-1) \cdot (4) + 6 \cdot (1) \cdot (4) - 2 \cdot (-1) \cdot (-2)$$

$$-32 + 20 + 24 - 4 =$$

$$+24 - 36 = -8$$

$$4. 2a^3b^3 - 3ab^2 + 6a^2b - 4ab \quad \{ a=-1, b=2$$

$$2 \cdot (-1)^3 \cdot (2)^3 - 3 \cdot (-1) \cdot (2)^2 + 6 \cdot (-1)^2 \cdot (2) - 4 \cdot (-1) \cdot (2)$$

$$2 \cdot (-1) \cdot (8) - 3 \cdot (-1) \cdot (4) + 6 \cdot (1) \cdot (2) - 4 \cdot (-1) \cdot (2)$$

$$+16 + 12 - 12 - 8 =$$

$$+16 - 8 = +8.$$

$$3a^2b^3 - 2a^3b^2 + 6ab - 4ab^2 + 5a^2b \quad \begin{cases} a = -1 \\ b = -2 \end{cases}$$

$$3 \cdot (-1)^2 \cdot (-2)^3 - 2 \cdot (-1)^3 \cdot (-2)^2 + 6 \cdot (-1) \cdot (-2) - 4 \cdot (-1) \cdot (-2)^2 + 5 \cdot (-1)^2 \cdot (-2)$$

$$3 \cdot (+1) \cdot (-8) - 2 \cdot (-1) \cdot (+4) + 6 \cdot (-1) \cdot (-2) - 4 \cdot (-1) \cdot (+4) + 5 \cdot (+1) \cdot (-2)$$

$$-24 + 8 + 12 + 16 - 20 =$$

$$+36 - 34 = +2$$

Termos semelhantes:

Dois ou mais termos são semelhantes, quando tem a mesma parte literal.
Sublinhe, nos exercícios seguintes, os termos semelhantes:

1) $2a + 5a^2 + 7a + 8a$

2) $3a^2b + 7ab^2 - 2a^2b + 3a$ → Não tem

3) $a^4b^2c + a^3b^2c + a^2b^2c + a^3b^2c$

4) $3xy + 4x^2y - 3x^2y + 8x^2y$

5) $3abc + 2a + 7a^2bc + 3ab^2c$ → Não tem

6) $2a^3b + 7a^2b^2 + 8ab^2 - 9a^3b^3$

7) $a^2b^2 - a^2b + 4a^2b^2 - 9a^2b^2$

8) $3a + 2b - 3c - 4a + 8$ (não tem)

9) $2a^6 - 4a^3 - 2a^6 - 4a - 7$

10) $2a^2 + 3a^3 + 4a^4 - 2a^5 - 6a^6$ não tem.

Reduzir os termos semelhantes.

1. $4a + 7b - 5a + 3b$ = $-1a + 10b$

2. $2a - 3b - 4a + 8b - 7a$ = $-9a + 5b$

1) $2 \cdot (3a + 2b) - 7 \cdot (5a - 3b) - 2 \cdot (3a + 4b)$ =
 $6a + 4b - 35a + 21b - 6a - 8b$
 $-35a + 17b$

2) $3a \cdot (2a + 5) - 4a \cdot (5a - 3) - 2a \cdot (7a - 4)$
 $6a^2 + 15 - 20a^2 + 12a - 14a^2 + 8a$
 $-20a^2 + 35a$

3) $4a(5a - 6) - 3a(8a + 1) + 2a(3a - 6)$
 $20a^2 - 24a - 24a^2 - 3a + 6a^2 - 12a$
 $20a^2 - 39a$

4) $2a(3a^2 + 5) - 2a(5a^2 - 2) + 3a(2a^2 - 3)$
 $6a^3 + 10a - 10a^3 + 4a + 6a^3 - 9a$
 $+ 2a^3 + 5a$

5) $5a^2(3a - 1) - 7a(2a^2 + 6a) + 3a(2a - 7a^2)$
 $15a^3 - 5a^2 - 14a^3 - 42a^2 + 6a^2 - 21a^3$
 $-20a^3 - 41a^2$

$$A = 4x^3 - 2x + 1$$

$$B = 2x^2 + 3$$

$$C = 2x^3 + 3x^2 - 2x + 3$$

$$\left. \begin{array}{l} \text{calcular } 2.A \\ + 3.B + C. \end{array} \right\}$$

$$2.A = 8x^3 - 4x + 2$$

$$3.B = \quad \quad \quad + 9 + 6x^2$$

$$2x^3 - 2x + 3 + 3x^2$$

$$2.A + 3.B + C = 10x^3 - 6x + 14 + 9x^2$$

$$A = 2x^4 - 3x^2 + 6$$

$$B = 3x^3 - 4 + 6x^2$$

$$C = 2x^4 - 3x^3 + 2x - 1$$

$$\left. \begin{array}{l} 3.A + 2.B + 3.C \end{array} \right\}$$

$$A = 2x^4 - 3x^2 + 6$$

$$B = \quad + 6x^2 - 4 + 3x^3$$

$$C = 2x^4 \quad - 1 - 3x^3 + 2x$$

$$3.A = 6x^4 - 9x^2 + 18$$

$$2.B = \quad + 12x^2 - 8 + 6x^3$$

$$3.C = 6x^4 \quad - 3 - 9x^3 + 6x$$

$$12x^4 + 3x^2 + 7 - 3x^3 + 6x$$

$$A = 2x + 3y + 4z$$

$$B = 3x - 2y - 4z$$

$$C = 1x + 2y - 2z$$

$$D = 2x - 3y - 2z$$

$$\left. \begin{array}{l} 2.A + 3.B + 2.C + 3.D \end{array} \right\}$$

$$A = 4x + 6y + 8z$$

$$B = 9x - 6y - 12z$$

$$C = 2x + 4y - 4z$$

$$D = 6x - 9y - 6z$$

$$A + B + C + D = 21x - 5y - 14z$$

$$A = 1x^3 + 3x^2 - 7$$

$$B = 2x^2 + 3x - 1$$

$$C = 4x^3 - 3x^2 + 2x$$

$$D = 1x^2 - 4x + 2$$

$$\left. \begin{array}{l} 2.A + 3.B + 4.C + 2.D \end{array} \right\}$$

$$A = 1x^3 + 3x^2 - 7$$

$$B = \quad + 2x^2 - 1 + 3x$$

$$C = 4x^3 - 3x^2 + 2x$$

$$D = \quad 1x^2 + 2 + 4x$$

$$A = 2x^3 + 6x^2 - 14$$

$$B = \quad + 6x^2 - 3 + 9x$$

$$C = 16x^3 - 12x^2 + 8x$$

$$D = \quad 2x^2 + 4 + 8x$$

$$A + B + C + D = 18x^3 + 2x^2 - 13 + 9x$$

sendo: $A = -2x^3 + 4x^2 - 6x + 9$.

$$B = x^3 - 4x^2 + 10x - 11$$

$$C = 3x^3 - 2x^2 + 3x - 7$$

a) $A+B+C$.

$$A = -2x^3 + 4x^2 - 6x + 9$$

$$B = x^3 - 4x^2 + 10x - 11$$

$$C = 3x^3 - 2x^2 + 3x - 7$$

$$A+B+C = +2x^3 - 2x^2 + 7x - 9$$

b) $A-B+C$

$$A = -2x^3 + 4x^2 - 6x + 9$$

$$-B = -x^3 + 4x^2 - 10x + 11$$

$$C = 3x^3 - 2x^2 + 3x - 7$$

$$A-B+C = +6x^2 - 13x + 13$$

c) $A+B-C$.

$$A = -2x^3 + 4x^2 - 6x + 9$$

$$B = x^3 + 4x^2 + 10x - 11$$

$$C = -3x^3 + 2x^2 - 3x + 7$$

$$A+B-C = -4x^3 + 10x^2 + 1x + 5$$

d) $B-A-C$.

$$-A = +2x^3 - 4x^2 + 6x - 9$$

$$B = +x^3 - 4x^2 + 10x - 11$$

$$-C = -3x^3 + 2x^2 - 3x + 7$$

$$-A+B-C = -6x^2 + 13x - 13$$

Exercicios

a) $A = -2x^3 + 3x - 1$
 $B = 4x^2 - 3$
 $C = -3x^2 - 8x + 7$ $\rightarrow 2 \cdot A$

$$A = -4x^3 + 6x - 2$$
$$B = -3 + 4x^2$$
$$C = -8x + 7 - 3x^2$$
$$A+B+C = -4x^3 - 2x + 2 + 1x^2$$

b) $A = -2x^3 + 3x - 1$
 $B = 4x^2 - 3$
 $C = -3x^2 - 8x + 7$ $\rightarrow 3 \cdot B$

$$A = -2x^3 + 3x - 1$$
$$B = -9 + 12x^2$$
$$C = -8x + 7 - 3x^2$$
$$A+B+C = -2x^3 + 11x - 3 + 9x^2$$

c) $A = -2x^3 + 3x - 1$
 $B = 4x^2 - 3$
 $C = -3x^2 - 8x + 7$ $\rightarrow 2 \cdot A - 3B + C$

$$2 \cdot A = -4x^3 + 6x - 2$$
$$-3B = -12x^2 + 9$$
$$+C = -8x + 7 - 3x^2$$
$$2 \cdot A - 3B + C = -4x^3 - 2x + 14 - 15x^2$$

$$d) \begin{array}{l} A = -2x^3 + 3x - 1 \\ B = 4x^2 - 3 \\ C = -3x^2 - 8x + 7 \end{array} \rightarrow 5 \cdot C$$

$$\begin{array}{l} A = -2x^3 + 3x - 1 \\ B = -3 + 4x^2 \\ C = -40x + 35 - 15x^2 \\ A + B + 5C = -2x^3 - 37x + 31 - 11x^2 \end{array}$$

$$e) \begin{array}{l} A = -2x^3 + 3x - 1 \\ B = 4x^2 - 3 \\ C = -3x^2 - 8x + 7 \end{array} \rightarrow 3 \cdot B - 2 \cdot A - 5 \cdot C$$

$$\begin{array}{l} -2A = +4x^3 - 6x + 2 \\ 3 \cdot B = -9 + 12x^2 \\ -5C = +40x - 35 + 15x^2 \\ -2 \cdot A + 3 \cdot B - 5C = +4x^3 + 34x - 42 + 27x^2 \end{array}$$

$$f) \begin{array}{l} A = -2x^3 + 3x - 1 \\ B = 4x^2 - 3 \\ C = -3x^2 - 8x + 7 \end{array} \rightarrow -A - B + 3C$$

$$\begin{array}{l} -A = +2x^3 - 3x + 1 \\ -B = +3 - 4x^2 \\ +3C = -24x + 21 - 9x^2 \\ -A - B + 3C = +2x^3 - 27x + 25 - 13x^2 \end{array}$$

$$\text{Dados: } \begin{array}{l} A = 2x^3 - 4x^2 - 3x + 8 \\ B = 2x^2 - 4 + 3x \\ C = +x^3 + 2x - 3 \end{array}$$

$$a) \text{ calcular: } 2 \cdot A - 3B - 2C$$

$$\begin{array}{l} 2A = 4x^3 - 8x^2 - 6x + 16 \\ 3B = -6x^2 - 9x + 12 \\ 2C = -2x^3 - 4x + 6 \\ A - B - C = +2x^3 - 14x^2 - 19x + 34 \end{array}$$

$$b) \text{ calcular:}$$

$$\begin{array}{l} 4B - 2C - 3A \\ -3A = -6x^3 + 12x^2 + 9x - 24 \\ 4B = -8x^2 - 12x + 16 \\ -2C = -2x^3 - 4x + 6 \\ -3A + 4B - 2C = -8x^3 + 4x^2 - 7x - 2 \end{array}$$

$$c) \text{ calcular:}$$

$$\begin{array}{l} 3C - 2A - 5B \\ +3C = 3x^3 + 6x - 9 \\ -2A = -4x^3 + 6x - 16 + 8x^2 \\ -5B = -15x + 20 - 10x^2 \\ +3C - 2A - 5B = -1x^3 - 3x - 5 - 2x^2 \end{array}$$

$$A = 2x^3 - 4x^2 - 3x + 8$$

$$B = -5x^2 + 3$$

$$C = 2x + 3 - 4x^2 + 1x^3$$

$$C = 2x + 3 - 4x^2 + 1x^3$$

$$-2A = 6x - 16 - 4x^2$$

$$-3B = -9 + 15x^2$$

$$C - 2A - 3B$$

$$R = C - 2A - 3B =$$

$$+8x - 22 - 8x^2 - 16x^3$$

$$2a(4a-5) + 3a(-b+8a) - 4a(3a-b) + 1a(2a-6)$$

$$8a^2 - 10a - 18a + 24a^2 - 12a^2 + 24a + 2a^2 - 6a$$

$$22a^2 - 10a$$

$$2(3a+2b-4c) - 4(2b-3c) - 2(4a-2b) - 3(3b-4c)$$

$$6a + 4b - 8c - 8b + 12c - 8a + 4b - 9b + 12c$$

$$-8c - 9b + 16c$$

$$A = 3x - 2y - 4z$$

$$B = -2y + 3x - 1z$$

$$C = 2z - 3x + 1y$$

$$2c - 2A - 3B$$

$$-2A = 6x + 4y + 8z$$

$$-3B = 9x + 6y + 3z$$

$$2C = -6x + 2y + 4z$$

$$-2A - 3B + 2C = -21x + 12y + 15z$$

$$A = 3x - 2y - 4z$$

$$B = -2y + 3x - 1z$$

$$C = 2z - 3x + 1y$$

$$4A - 3B + 2C$$

$$+4A = 12x - 8y - 16z$$

$$-3B = 9x + 6y + 3z$$

$$+2C = -6x + 2y + 4z$$

$$4A - 3B + 2C = -3x - 9z$$

$$① (2x+8) \cdot (3x+2)$$

$$2x+8$$

$$3x+2$$

$$4x+16$$

$$6x^2 + 24x$$

$$6x^2 + 28x + 16$$

$$② (3x-5) \cdot (7x+1)$$

$$3x-5$$

$$7x+1$$

$$+3x-5$$

$$21x^2 - 35x$$

$$-21x^2 - 38x - 5$$

$$③ (3x-1) \cdot (2x-6)$$

$$3x-1$$

$$2x-6$$

$$18x+6$$

$$6x^2 - 2x$$

$$6x^2 + 20x + 6$$

$$④ (3x^2-x-2) \cdot (2x+1)$$

$$6x^3 + 3x^2 - 2x^2 - 1x - 4x - 2$$

$$6x^3 + 1x^2 - 5x - 2$$

$$⑤ (3x^2-1) \cdot (-2x^3+3x-1)$$

$$-6x^5 + 9x^3 - 3x^2 + 2x^3 - 3x + 1$$

$$-6x^5 + 11x^3 - 3x^2 - 3x + 1$$

$$⑥ (3x+2) \cdot (3x+2)$$

$$9x^2 + 6x + 6x + 4$$

$$9x^2 + 12x + 4$$

$$⑦ (3x-2)^2 = (3x-2) \cdot (3x-2)$$

$$3x-2$$

$$3x-2$$

$$-6x+4$$

$$9x^2 - 6x$$

$$9x^2 - 12x + 4$$

$$⑧ (5x+1) \cdot (5x-1)$$

$$5x+1$$

$$5x-1$$

$$-5x-1$$

$$25x^2 + 5x$$

$$25x^2 - 1$$

$$9) (1x+5)(1x+6)$$

$$\begin{array}{r} 1x+5 \\ 1x+6 \\ \hline 6x+30 \\ 1x^2+5x \\ \hline 1x^2+11x+30 \end{array}$$

$$10) (-2a+1)(1a-2)(1a+3) =$$

$$\begin{array}{r} 2a+1 \\ 1a-2 \\ \hline 1a+3 \\ -4a-2 \end{array}$$

$$2a^2+1a$$

$$11) (2a-1b)(1a+2b)(1a-1b)$$

$$\begin{array}{r} 2a^2+4ab-1ab-2b^2 \\ (2a^2+3ab-2b^2)(1a-1) \\ 2a^3-2a^2b+3a^2b-3a \end{array}$$

$$1) (2x+1)^3 = (2x+1)(2x+1)(2x+1)$$

$$\begin{array}{r} (4x^2+2x+2x+1)(2x+1) \\ 8x^3+4x^2+8x^2+4x+2x+1 \\ \hline 8x^3+12x^2+6x+1 \end{array}$$

$$2) \left(\frac{2}{5}x^2 - \frac{3}{2}x - \frac{3}{4}\right) \cdot \left(\frac{10}{3}x - \frac{20}{1}\right)$$

$$\begin{array}{r} 20x^3 - 40x^2 - 30x^2 + 60x - 30x + 60 \\ \hline 15x^3 - 5x^2 - 6x + 12 \end{array}$$

$$\frac{4}{3}x^3 = -\frac{240x^2}{20} - \frac{150x^2}{20} + 360x - 30x + 15$$

$$\frac{4}{3}x^3 = -\frac{390}{20} + \frac{330x}{20} + 15$$

$$3) (3a^4 - 5a^2 + 2a + 6)(2a^3 - 1)$$

$$\begin{array}{r} 6a^7 - 3a^4 - 10a^5 + 5a^2 + 4a^4 - 2a + 12a^3 + 6 \\ \hline 6a^7 + 1a^4 - 10a^5 - 5a^2 - 2a + 12a^3 - 6 \end{array}$$

$$\textcircled{a} (2x^3 - 4x^2 + 5x - 1) \cdot (3x^2 - 3x)$$

$$6x^5 - 6x^4 - 12x^4 - 12x^3 + 15x^3 - 15x^2 - 3x^2 - 3x$$

$$6x^5 - 18x^4 + 3x^3 - 18x^2 - 3x \quad \underline{\underline{c}}$$

\textcircled{D}

$$A = 3a - 2 \quad \left. \begin{array}{l} \\ \\ \end{array} \right\} B^2 - 3 \cdot A^2$$

$$B = 5a + 4$$

$$(5a + 4)^2 - 3 \cdot (3a - 2)^2$$

$$(5a + 4) \cdot (5a + 4) - 3 \cdot (3a - 2) \cdot (3a - 2)$$

$$25a^2 + 20a + 20a + 16 - 3 \cdot (9a^2 - 6a - 6a + 4)$$

$$\underline{25a^2 + 20a + 20a + 16 - 27a^2 + 18a + 18a - 12}$$

$$-2a^2 + 76a + 4$$

$$\textcircled{a} A \cdot B - 3 \cdot B$$

$$(3a - 2) \cdot (5a + 4) - 3 \cdot (5a + 4)$$

$$15a^2 - 12a - 10a + 8 - 15a - 12$$

$$15a^2 - 13a - 20$$

\textcircled{D}

$$A = -2x + 3 \cdot B = 2 - 5x \quad \text{e} \quad c = 4x - 3$$

$$A = -2 - (2x - 3)$$

$$B = (2 - 5x)$$

$$C = (4x - 3)^2$$

$$A = -2 - (2x - 3) \cdot (2 - 5x) \cdot (4x - 3)^2$$

$$(4x - 3) \cdot (4x - 3) - 2(-2x + 3) \cdot (2 - 5x)$$

$$16x^2 - 12 - 12x + 9 - 2(-4x + 10x^2 + 6 - 15x)$$

$$\underline{16x^2 - 12 - 12x + 9 + 8x - 20x^2 - 12}$$

$$-4x^2 + 14x - 3$$

\textcircled{D}

$$V = 2x - 3$$

$$V = 2 - 5x$$

$$W = 4x - 3$$

$$2V \cdot V - 4W + 2V - 2V \cdot W$$

$$2 \cdot (2x - 3) \cdot (2 - 5x) - 4(4x - 3) + 2(2 - 5x) \cdot (4x - 3)$$

$$2 \cdot (4x - 10x^2 - 6 + 15x) - 16x + 12 + (4 - 10x) \cdot (4x - 3)$$

$$8x - 20x^2 - 12 + 30x - 16x + 12 + 4 - 10x -$$

$$\underline{16x^2 + 24x - 18}$$

$$-36x^2 - 48x - 14$$

\textcircled{D}

$$A = 2x - 3$$

$$B = 2x + 3$$

$$C = 3 - 2x$$

$$A \cdot B - 3A \cdot C + 2B \cdot C$$

$$(2x - 3) \cdot (2x + 3) - (-6x + 9) \cdot (3 - 2x) + (4x + 6) \cdot (3 - 2x)$$

$$4x^2 + 6x - 6x - 9 - 3(6x - 4x^2 - 9 + 6x) + 2(6x - 4x^2 + 9 - 6x)$$

$$4x^2 + 6x - 6x - 9 - 18x + 12x^2 + 27 - 18x + 12 - 8x^2 + 12x - 12x$$
$$8x^2 - 36x - 36$$

$$A = 2x - 3$$

$$B = 2x + 3$$

$$C = 3 - 2x$$

$$A \cdot C - 2 \cdot A \cdot B + 2 \cdot B \cdot C$$

$$(2x - 3) \cdot (3 - 2x) - 2 \cdot (2x - 3) \cdot (2x + 3) + 2 \cdot (2x + 3) \cdot (3 - 2x)$$

$$(6x - 4x^2 - 9 + 6x) - 2 \cdot (4x^2 + 6 - 6x - 9) + 2 \cdot (6x - 4x^2 + 9 - 6x)$$

$$6x - 4x^2 - 9 + 6x - 8x^2 - 12 + 12x + 18 + 12x - 8x^2 + 18 - 12x$$

$$-20x^2 + 12x + 27$$

$$a) (x + 4)^2$$

$$① (3a + 5b)^2$$
$$9a^2 + 30ab + 25b^2$$

$$② (3a^2 + 4a^4)^2$$
$$9a^4 + 24a^6 + 16a^8$$

$$③ (7ab + 2a^2)^2$$
$$49a^2b^2 + 28a^3b + 4a^4$$

$$④ (5a^2b + 2ab^2)^2$$
$$25a^4b^2 + 20a^3b^3 + 4a^2b^4$$

$$⑤ (2a + 3a^2b)^2$$
$$4a^2 + 12a^3b + 9a^4b^2$$

$$⑥ (ab + ac)^2$$
$$a^2b^2 + a^2c^2 + 2abc$$

$$① (3a + 5b)^2$$
$$9a^2 + 30ab + 25b^2$$

$$② (3a^2 + 4a)^2$$
$$9a^4 + 24a^3 + 16a^2$$

$$③ (7ab + 2a^2)^2$$
$$49a^2b^2 + 28a^3b + 4a^4$$

$$④ (5a^2b + 2ab^2)^2$$
$$25a^4b^2 + 20a^3b^3 + 4a^2b^4$$

$$(2a + 3a^2b)^2$$

$$4a^2 + 12a^3b + 9a^4b^2$$

$$(ab + ac)^2$$

$$a^2b^2 + a^2c^2$$

$$+ 2a^2bc + a^2c^2$$

(*)

$$\textcircled{1} (6a - 5b)^2$$

$$36a^2 - 60ab + 25b^2$$

$$\textcircled{2} (3a^2 - 4b)^2$$

$$9a^4 - 24a^2b + 16b^2$$

$$\textcircled{3} (5a - 2a^2)^2$$

$$25a^2 - 20a^3 + 4a^4$$

$$\textcircled{4} (3a^3 - 6)^2$$

$$9a^6 - 36a^3 + 36$$

$$\textcircled{5} (a^4b - a^3b^2)^2$$

$$a^8b^2 - 2a^7b^3 + a^6b^4$$

$$\textcircled{6} (a^5b^2 - 3ab)^2$$

$$a^{10}b^4 - 6a^6b^3 + 9a^2b^2$$

$$\textcircled{7} (2a^3b^4c^2)^2$$

$$4a^6b^8c^4$$

$$\textcircled{8} (2a - 7a^3b)^2$$

$$4a^2 - 28a^4b + 49a^6b^2$$

$$\textcircled{9} (a^4b^2 - 5)^2$$

$$a^8b^4 - 10a^4b^2 + 25$$

$$\textcircled{10} (3 - 2a^3b^4)^2$$

$$9 - 12a^3b^4 + 4a^6b^8$$

$$1 - (7 - a^3b)^2$$

$$49 - 14a^3b + a^6b^2$$

$$2 - (8 - a^2b)^2$$

$$64 - 16a^2b + a^4b^2$$

$$3 - (2a^3 - 7a^4)^2$$

$$4a^6 - 28a^7 + 49a^8$$

$$4 - (8a^5 - 2a^4b)^2$$

$$64a^{10} - 32a^9b + 4a^8b^2$$

(*)

$$\textcircled{1} (4y^2 - 3) \cdot (4y^2 + 3) = 16y^4 - 9$$

$$\textcircled{2} (9x^2 - 6) \cdot (9x^2 + 6) = 81x^4 - 36$$

$$\textcircled{3} (y^2 - a^4) \cdot (y^2 + a^4) = y^4 - a^8$$

$$\textcircled{4} (2ab - 3) \cdot (2ab + 3) = 4a^2b^2 - 9$$

$$\textcircled{5} (3a^4b - 5) \cdot (3a^4b + 5) = 9a^8b^2 - 25$$

$$\textcircled{6} (2ab^2 - 5b) \cdot (2ab^2 + 5b) = 4a^2b^4 - 25b^2$$

$$\textcircled{1} (7a - 3b)^2 = 49a^2 - 42ab + 9b^2.$$

$$\textcircled{2} (2a^3 + 4b)^2 = 4a^6 + 16a^3b + 16b^2$$

$$\textcircled{3} (5a^2 - 3a) \cdot (5a^2 + 3a) = 25a^4 - 9a^2$$

$$\textcircled{4} (2a - 4b) \cdot (2a + 4b) = 4a^2 - 16b^2$$

$$\textcircled{5} (7a^2 + 6ab)^2 = 49a^4 + 84a^3b + 36a^2b^2$$

$$\textcircled{6} (2a^4 - 7)^2 = 4a^8 - 28a^4 + 49.$$

$$1. (a^8 - a^2) \cdot (a^8 + a^2) = a^{16} - a^4$$

$$2. (2a^3b - 4a^5)^2 = 4a^6b^2 - 16a^8b + 16a^{10}$$

$$3. (7a^2 + 8a^3)^2 = 49a^4 + 112a^5 + 64a^6$$

$$4. (3a^2b - 5a^2)^2 = 9a^4b^2 - 30a^4b + 25a^4$$

$$5. (2xy + 3x)^2 = 4x^2y^2 + 12x^2y + 9x^2$$

$$6. (7a^4 - 3b^2) \cdot (7a^4 + 3b^2) = 49a^8 - 9b^4$$

$$7. (2a + 5a^2b)^2 = 4a^2 + 20a^3b + 25a^4b^2$$

$$8. (2a^4 - 6a^3) \cdot (2a^4 + 6a^3) = 4a^8 - 36a^6$$

$$9. (7a^5 + 10)^2 = 49a^{10} + 140a^5 + 100$$

$$10. (6a^4b - 5a)^2 = 36a^8b^2 - 60a^5b - 25a^2$$

$$11. (2a + 5a^6) \cdot (2a - 5a^6) = 4a^9 - 25a^{10}$$

$$12. (9a^2 - 2a^3)^2 = 81a^4 - 36a^2b^3 - 4b^6$$

Exercicios

$$1. (x-11) \cdot (x+5)$$

$$\begin{array}{r} x-11 \\ (+5-11)(5 \cdot 11) \\ \hline x+5 \\ +5x-55 \\ \hline x^2-11x \\ x-6x-55 \end{array}$$

$$2. (x+8) \cdot (x-7)$$

$$\begin{array}{r} x+8 \\ (-7+8)(7 \cdot 8) \\ \hline x-7 \\ -7x-56 \\ \hline x^2+8x \\ x^2-1x-56 \end{array}$$

$$3. (x-1) \cdot (x+3)$$

$$\begin{array}{r} x-1 \\ \hline x+3 \\ +3x-3 \\ \hline +x-1x \\ \hline x^2-2x-3 \\ \downarrow \quad \downarrow \\ (+3-1) \cdot (3 \cdot 1) \end{array}$$

$$4. (x+8) \cdot (x-7)$$

$$\begin{array}{r} x+8 \\ \hline x-7 \\ -7x-56 \\ \hline x^2+8x \\ x^2-1x-56 \\ \downarrow \quad \downarrow \\ (-7+8) \cdot (7 \cdot 8) \end{array}$$

$$a) (2a+3)^2 = 4a^2 + 12a + 9$$

$$b) (a+1)^2 = a^2 + 2a + 1$$

$$c) (a-1)^2 = a^2 - 2a + 1$$

$$d) (x^3-2)^2 = x^6 - 4x^3 + 4$$

$$e) (3x^2-4)^2 = 9x^4 - 24x^2 + 16$$

$$f) (3x^2+a^3)^2 = 9x^4 + 6a^3x^2 + a^6$$

$$g) (5x^3-2x)^2 = 25x^6 - 20x^4 + 4x^2$$

$$h) (-a+3a)^2 = 9a^2 - 6a^2 - 6a^2 + a^2$$

$$i) (x^m+2)^2 = x^{2m} + 4x^m + 4$$

$$k. (a+b+c)^2 a^2 + b^2 + c^2$$

$$l. (a+b-c)^2 2ab - 2ac - 2bc + c^2 + b^2 + a^2$$

$$m. (2a-b-1)^2 4a^2 - 4ab + b^2 - 4a + 2b + 1$$

$$n. \left(\frac{3}{2}x-4\right)^2 \frac{9}{4}x^2 - \frac{24}{2}x + 16$$

$$o. \left(\frac{5}{4}x^2 - 2y\right)^2 \frac{25}{16}x^4 - \frac{25}{4}x^2y + 4y^2$$

$$p. (x^2+5) \cdot (x^2-5) x^4 - 25$$

$$q. (2x^3-1) \cdot (2x^3+1) 4x^6 - 1$$

$$r. (x+6) \cdot (x-7) x^2 - 1x - 42$$

$$s. (x+8) \cdot (x-8) x^2 - 64$$

$$t. (x+7a) \cdot (x-3a) x^2 + 4ax - 2a^2$$

$$u. (x+3a) \cdot (x-4a) x^2 - 4ax - 3ax - 12$$

$$v. (5x+2)^3 27x^3 + 54x^2 + 36x + 8$$

$$w. (2a-3)^3 8a^3 - 36a^2 + 54a - 27$$

$$x. (3a-1)^3 27a^3 - 27a^2 + 9a - 1$$

$$y. \left(x - \frac{2}{3}\right)^3 x^3 - \frac{6}{3}x^2 + \frac{12}{9}x - \frac{8}{27}$$

Exercícios.

$$1. (3a^4b^6 + 6a^5b^4 - 9a^6b^3 + 12a^5b^4) \div (-3a^2b^3) \\ 1a^2b^3 - 2a^3b^4 + 3a^4 - 4a^3b$$

$$2. (25a^4b^3 - 30a^5b^4 + 10a^6b^5) \div (-5a^4b^3) \\ -5 + 6a^2b^4 - 2a^2b^2$$

$$3. (8ax^4 + 12ax^6 - 6ax^5 + 10ax^7 - 16ax^8) \\ \div (2ax^4) \\ 4 + 6x^2 - 3x + 5x^3 - 8x^4$$

$$4. (a^6b^3c + a^7b^4c^2 + a^6b^4c^2 - a^5b^6c^5) \div (a^5b^3c) \\ a^1 + a^2b^1c^1 + a^1b^1c^1 + b^3c^4$$

$$5. (6x^4 - 8x^6 - 4x^5 - 2x + 10x^3) \div (-2x) \\ -3x^3 + 4x^5 + 2x^4 + 1x - 5x^2$$

$$6. (9xy^4 - 12xy^3 + 15xy^5 - 21xy^2 + 6xy^6) \div (-3xy) \\ -3xy^2 + 4xy^4 - 5xy^3 + 7xy - 2xy^5$$

Exercícios P/ casa.

$$1. (a^6b^5c^9) \div (-a^2b^5c) \\ -a^4 + c^8$$

$$2. (-15a^7) \div (-3a^7) \\ +5$$

$$3. (+20a^4b^3) \div (-4a^2b^3) \\ -5a^2$$

$$4. (-5a^6b^2c) \div (-5a^6b^2c) \\ +1$$

$$5. (4a^3 - 6a^4 - 8a^4 - 10a^2) \div (-2a^2) \\ -2a^1 + 3a^4 + 4a^2 + 5$$

$$6. (9xy + 12x^2y - 15x^3y) \div (-3xy) \\ -3 - 4x + 5x^2$$

$$7. (a^8b - a^7b - a^6b - a^5b) \div (a^5b) \\ +a^3 - a^2 - a - 1$$

Exercício.

$$\textcircled{1} \begin{array}{r} 8x^3 + 18x^2 + 4x - 3 \quad | \quad 2x^2 + 3x \\ \underline{-8x^3 - 12x} \quad \quad \quad 4x + 3 \\ 6x^2 + 4x - 3 \\ \underline{-6x^2 - 9x} \\ -5x - 3 \end{array}$$

$$\textcircled{2} \begin{array}{r} 3a^2 + 2a - 5 \quad | \quad a + 3 \\ \underline{-3a^2 - 9a} \quad \quad \quad 3a - 7 \\ -7a - 5 \\ \underline{+7a + 21} \\ +16 \end{array}$$

$$\textcircled{3} \begin{array}{r} 2x^2 + 13x - 27 \quad | \quad x + 6 \\ \underline{-2x^2 - 12x} \quad \quad \quad 2x + 1 \\ 1x - 27 \\ \underline{-1x - 6} \\ -33 \end{array}$$

$$4. \begin{array}{r} 4x^4 - 3x^2 - 2x + 5 \quad | \quad 2x - 5 \\ \underline{-10x^3 + 4x^4} \quad \quad \quad 2x^3 - 5x^2 + 14x \\ 10x^3 + 3x^2 - 2x \\ \underline{10x^3 + 25x^2} \\ -28x^2 - 2x + 5 \\ \underline{-28x^2 + 10x} \\ 68x + 5 \\ \underline{-68x + 170} \\ +175 \end{array}$$

$$1. \frac{(-12a^2b^4)}{2a^4 - b^4} \div (-6a^2b^3) =$$

$$2. \frac{(+15a^4b^2c^4)}{5a^2 - c^2} \div (-3a^2b^2c^3) =$$

$$3. \frac{(-21a^3x^4)}{3a^3 - x^4} \div (-7ax^3) =$$

$$4. \frac{(-28ab)}{+7a^2} \div (-4ab)$$

$$5. \frac{(-6a^2b + 15a^4b^3 + 18a^5b)}{2 - 5a^2b^2 + ba^3} \div (-3a^2b)$$

$$6. \frac{(-60a^4 + 45a^3 - 30a^2 + 15a^6)}{+4a - 3 + 2a^4 - 1a^3} \div (-15a^3)$$

$$7. \frac{(-25x^4y + 30x^6y + 15x^5y - 40x^3y)}{5x^4 - 6x^3 - 3x^2 - 8} \div (-5x^3y)$$

$$8. \frac{a^3 - 3a^2 + 3a - 1}{a^3 + 1a^2} \div \frac{a - 1}{a^2 + 2a + 1}$$

$$\begin{array}{r} -2a^2 + 3a - 1 \\ +2a^2 - 2a \\ \hline +1a - 1 \\ -1a + 1 \\ \hline 0 \quad 0 \end{array}$$

$$\frac{6/a^4 + 1/a^3 - 22/a^2 + 21/a}{-6/a^4 + 9/a^3} \div \frac{(2a^2 - 3a)}{3a^2 + 5 + 3,5}$$

$$\begin{array}{r} +10/a^3 - 22 \\ -16/a^3 + 15/a^2 \\ \hline -7/a^2 + 21 \end{array}$$

$$9. \frac{x^3 - 3x^2 + 3x + 1}{-x^3 - 1x^2} \div \frac{x+1}{x^2 + 2x}$$

$$\begin{array}{r} +2x^2 + 3x + 1 \end{array}$$

$$1. (4a + 5b)^2 =$$

$$16a^2 + 25b^2 + 40ab$$

$$2. (2a - 3b)^2 =$$

$$4a^2 - 9b^2 - 12ab$$

$$3. (5a - 7b) \cdot (5a + 7b) =$$

$$+25a^2 - 35ab - 35ab - 49b^2$$

$$4. (a - 10)(a + 5) =$$

$$a^2 - 5a - 50$$

$$5. (2a + 1)^3 = 8a^3 + 12a^2 + 6a + 1$$

$$6. (3x - y)^3 = 27x^3 - 27x^2y + 9xy^2 - y^3$$

$$7. (3a - 4a^2y)^2 = 9a^2 - 24a^3y + 16a^4y^2$$

$$8. (2a^3 + 4a^2)^2 = 4a^6 + 16a^5 + 16a^4$$

$$9. (12a^4 - y^2)(12a^4 + y^2) = 144a^8 - y^4$$

$$10. (3a - 2a^2)^3 = 27a^3 - 54a^4 + 36a^5 - 8a^6$$

Fatoração (1º caso - fator comum)

$$1. 4a^3 + 8a^5 + 12a^7 = 4a^3(1 + 2a^2 + 3a^4)$$

$$2. ab + ac + ay + ax = a(b + c + y + x)$$

$$3. 5a^4b + 10a^5b + 20a^6b = 5a^4b(1 + 2a + 4a^2)$$

$$4. 2a^7b^3 + 6a^4b + 12a^5b - 8a^7b^3 = 2a^4b(1 + 3 + 6a - 4a^3b^2)$$

$$5. 6ay + 9a^2y - 15a^3y + 21a^5y = 3ay(2 + 3a - 5a^2 + 7a^4)$$

$$6. a^4b + a^5b^2 + a^7b^3 = a^4b(1 + ab + a^3b^2)$$

$$7. 14 - 21a + 35a^2 = 7(2 - 3a + 5a^2)$$

$$8. 9a^6 - 18a^5 - 27a^4 = 9a^4(1 - 2 - 3a)$$

$$9. 3a(x+y) - 8a^2(x+y) =$$

$$(x+y) \cdot (3a - 8a^2)$$

$$10. 5x + 3y + 2z = 1 \quad (5x + 3y + 2z)$$

Exercícios

$$1. 4a^6 + 8a^5 - 6a^3 + 10a = 2(2a^5 + 4a^4 - 3a^2 + 5)$$

$$2. abx + aby + abz = ab(x + y + z)$$

$$3. 9a^3b^4 - 15a^6b - 18a^7b^3 + 21a^4b^3 = 3a^3b(3b^3 - 5a^3 - 6a^4b^2 + 7a^2b^2)$$

$$4. 5a^4y^6 - 1a^7y^4 + 25a^3y^2 - 35a^6y^3 = 5a^3y^2(1ay - 3a^4y^2 + 5 - 7a^3y)$$

Fatoração "2º caso"

$$a^2 + 6a + ab + 6b = a(a+6) + b(a+6) = (a+b) \cdot (a+6)$$

$$1- x^2 - 8x - 6x - 8b$$
$$\frac{x(x-8) + b(x-8)}{(x-8)(x+b)}$$

$$2- a^2 - 9a + ab - 9b$$
$$\frac{a(a-9) + b(a-9)}{(a-9)(a+b)}$$

$$3- y^2 + 3y + ay + 3a$$
$$\frac{y(y+3) + a(y+3)}{(y+3)(y+a)}$$

$$4- a^2 + 12a + ac + 12c$$
$$\frac{a(a+12) + c(a+12)}{(a+12)(a+c)}$$

65

4A - 3B + 2C.

6-

65
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5
250

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250

Deise Gervinell mochado

Milton

rise to mochado 75
Gervinell 85
160 1/4

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