

Respostas c/ Resoluções

1. a. $5^{3x-7} = 25$

$$5^{3x-7} = (5)^2$$

$$3x-7 = 2$$

$$3x = 9$$

$$x = 3$$

c. $(5^x)^x = (25^2)^9$

$$5^{x^2} = 5^{36}$$

$$x^2 = 36$$

$$x = \pm 6$$

b. $2^{6x+7} = 128$

$$2^{6x+7} = 2^7$$

$$6x+7 = 7$$

$$x = 0$$

$$2. \quad P = 8x^5 - 5x^4 + 7x^3 - 3x + 4$$

$$Q = 4x^2 - 5$$

$$a. \quad P+Q = 8x^5 - 5x^4 + 7x^3 + 4x^2 - 3x - 1$$

$$b. \quad P \cdot Q = 32x^7 - 20x^6 + 28x^5 - 12x^3 + 16x^2 - 40x^5 + 25x^4 - 35x^3 + 15x - 20 = 32x^7 - 20x^6 - 12x^5 + 25x^4 - 47x^3 + 16x^2 + 15x - 20$$

$$c. \quad \frac{(-2)P}{Q} = \frac{-16x^5 + 10x^4 - 14x^3 + 6x + 8}{4x^2 - 5}$$

$$\frac{-36x^5 + 20x^4 - 34x^3 + 0x^2 + 6x - 8}{16x^5 + 0} - 20x^3$$

$$\frac{0 \quad 20x^4 \quad -34x^3 + 0x^2 + 6x - 8}{-20x^4 + 0 \quad + 25x^2}$$

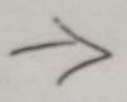
$$\frac{0 \quad -34x^3 + \frac{25}{2}x^2 + 6x - 8}{\frac{4 \cdot 17}{2}x^3 + 0x^2 - \frac{85}{2}x}$$

$$\frac{0 + \frac{25}{2}x^2 - \frac{73}{2}x - 8}{-\frac{25}{2}x^2 + 0x + \frac{125}{8}}$$

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$$\frac{0 + \frac{25}{2}x^2 - \frac{73}{2}x - 8}{-\frac{25}{2}x^2 + 0x + \frac{125}{8}}$$

$$\frac{-\frac{73}{2}x + \frac{61}{8}}{2}$$



$$\frac{4x^2 + 0x - 5}{-4x^3 + \frac{5}{2}x^2 - \frac{17}{2}x + \frac{25}{8}}$$

Quociente

$$\frac{125}{8} - \frac{64}{8}$$

⇒ Divisor Lengua

d.

$$\frac{P}{x+2}$$

→ Divisão Simbólica

→ polinômio do tipo $x+a$

$$\begin{array}{r} -2 \mid 8 \quad -5 \quad 7 \quad 0 \quad -3 \quad 4 \end{array}$$

$$\begin{array}{r} 8 \quad -21 \quad 19 \quad -98 \quad 193 \quad -382 \\ \hline -16 \quad 12 \quad -98 \quad 196 \quad -386 \end{array}$$

$$\text{Quociente} = 8x^4 - 21x^3 + 19x^2 - 98x + 193$$

$$\text{resto} = -382$$

3.

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

b. $9x^2 - 12x + 4 = (3x - 2)^2$

c. $(x + \sqrt{5})(x - \sqrt{5}) = x^2 - 5$

d. $(x + 1)^3$

e. $(3x - 1)^3$

f. $x^3 + 1$

g. $8x^3 - 27$

h. $(x^2 + x + 1)^2$

i. $(x - 5)(x - 2)$

j. $(x + 3)(x + 2)$

k. $(x + 3)(x - 2)$

$$4. f(x) = \sqrt{x-8}$$

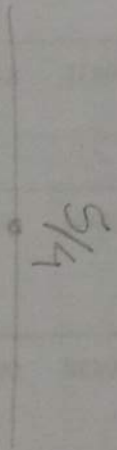
→ A string quadrante se existe \forall números ≥ 0 logo,
 $x-8 \geq 0 \Rightarrow x \geq 8$. Portanto,
o domínio é:
 $[8, \infty)$ → não são permitidos
números menores que 8.

5. Estimar de nivel de uma função

$$f(x) = 4x + 5$$

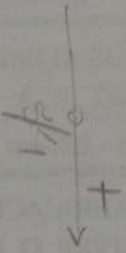
① $4x + 5 = 0$

$$x = \frac{5}{4}$$



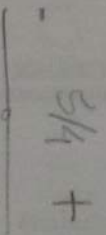
② $4x - 5 > 0$

$$x > \frac{5}{4}$$



③ $4x - 5 < 0$

$$\Rightarrow x < \frac{5}{4}$$



6. Faktore: $7x^3 + 26x^2 - 15x + 2$

Candidaten a sein?

numerator: divisoren de 2: $\pm 1, \pm 2$

denominator: divisoren de 7: $\pm 1, \pm 7$

Candidaten: $\pm 1, \pm \frac{1}{7}, \pm 2, \pm \frac{2}{7}$

Substituieren mit Polynomdivision

$$c = \frac{2}{7} \text{ sein!}$$

→ Division Polynomdivision

$(x - \frac{2}{7})$ (divisão sintética)
(o resto deve ser 0!)

\Rightarrow
 $P(x) = (x - \frac{2}{7}) (7x^2 + 28x - 7)$

o resto deve ser 0!
ou seja, não há resto

$\begin{matrix} -2 + \sqrt{3} \\ -2 - \sqrt{3} \end{matrix}$