

RESPOSTAS DOS EXERCÍCIOS

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SIMPLIFIQUE CADA EXPRESSÃO. ESCRIBA SUA RESPOSTA SEM EXPONENTE NEGATIVO.

(a) $\sqrt{200} - \sqrt{32}$

FATORANDO

$$\begin{array}{r|l} 200 & 2 \\ 100 & 2 \\ 50 & 2 \\ 25 & 5 \\ 5 & 5 \\ \hline & 1 \end{array}$$

$$200 = 2^3 \cdot 5^2$$

$$\begin{array}{r|l} 32 & 2 \\ 16 & 2 \\ 8 & 2 \\ 4 & 2 \\ 2 & 2 \\ \hline & 1 \end{array}$$

$$32 = 2^5, \text{ logo,}$$

$$\sqrt{200} - \sqrt{32} = \sqrt{2^3 \cdot 5^2} - \sqrt{2^5} = \sqrt{2^2 \cdot 2 \cdot 5^2} - \sqrt{2^2 \cdot 2^2 \cdot 2} =$$

$$= \sqrt{2^2} \cdot \sqrt{5^2} \cdot \sqrt{2} - \sqrt{2^2} \sqrt{2^2} \cdot \sqrt{2} = 2 \cdot 5 \cdot \sqrt{2} - 2 \cdot 2 \sqrt{2} = 10\sqrt{2} - 4\sqrt{2} = 6\sqrt{2}$$

$$\therefore \sqrt{200} - \sqrt{32} = 6\sqrt{2}$$

∴ SIGNIFICA "CONCLUSÃO"

(b) $(3a^3b^3)(4ab^2)^2 = 3a^3b^3 \cdot (4^2 \cdot a^2 \cdot (b^2)^2) = 3a^3b^3 \cdot (16a^2b^4) =$

$$3 \cdot 16a^3 \cdot a^2 \cdot b^3 \cdot b^4 = 48a^{3+2} \cdot b^{3+4} = 48a^5b^7$$

$$\therefore (3a^3b^3)(4ab^2)^2 = 48a^5b^7$$

(c) $\left(\frac{3x^{3/2}y^3}{x^2y^{-1/2}}\right)^{-2} = \left(3x^{3/2}y^3x^{-2}y^{1/2}\right)^{-2} = \left(3x^{3/2} \cdot x^{-2} \cdot y^3 \cdot y^{1/2}\right)^{-2} =$

$$= \left(3x^{3/2-2}y^{3+1/2}\right)^{-2} = \left(3x^{-1/2}y^{7/2}\right)^{-2} = 3^{-2} \left(x^{-1/2}\right)^{-2} \left(y^{7/2}\right)^{-2} = \frac{1}{3} x y^{-7} =$$

$$= \frac{x}{3y^7}$$

$$\therefore \left(\frac{3x^{3/2}y^3}{x^2y^{-1/2}}\right)^{-2} = \frac{x}{3y^7}$$

DETERMINE O VALOR DA EXPRESSÃO SEM USAR CALCULADORA

$$29) \frac{2^{4/3} (2^{5/3})}{2^5} = \frac{2^{4/3 + 5/3}}{2^5} = \frac{2^{9/3}}{2^5} = \frac{2^3}{2^5} = 2^{3-5} = 2^{-2} = \frac{1}{2^2} = \frac{1}{4}$$

$$33) [\sqrt{8} (2^{5/2})]^{-1/2} = [\sqrt{2^3} (2^{5/2})]^{-1/2} = (2^{3/2} \cdot 2^{5/2})^{-1/2} = (2^{3/2 + 5/2})^{-1/2} = (2^{8/2})^{-1/2} = (2^4)^{-1/2} = 2^{-4 \cdot 1/2} = 2^{-2} = \frac{1}{2^2} = \frac{1}{4}$$

$$30) \frac{5^{-3} (5^2)}{(5^{-2})^3} = \frac{5^{-3+2}}{5^{-2 \cdot 3}} = \frac{5^{-1}}{5^{-6}} = 5^{-1 - (-6)} = 5^{-1+6} = 5^5$$

$$32) \frac{\sqrt{27} (\sqrt{3})^3}{9} = \frac{\sqrt{3^3} \cdot \sqrt{3^3}}{9} = \frac{\sqrt{3^3 \cdot 3^3}}{9} = \frac{\sqrt{3^{3+3}}}{9} = \frac{\sqrt{3^6}}{9} = \frac{\sqrt{3^2 \cdot 3^2 \cdot 3^2}}{9} = \frac{\sqrt{3^2} \cdot \sqrt{3^2} \cdot \sqrt{3^2}}{9} = \frac{3 \cdot 3 \cdot 3}{9} = \frac{3 \cdot \cancel{3} \cdot 3}{\cancel{3} \cdot 3} = 3$$

DETERMINE O VALOR DE n (a > 0, a ≠ 1)

$$35. a^3 \cdot a^7 = a^n \Rightarrow a^{3+7} = a^n \Rightarrow a^{10} = a^n \Rightarrow \boxed{n=10}$$

$$39. (a^3)^n = a^{12} \Rightarrow a^{3n} = a^{12} \Rightarrow 3n = 12 \Rightarrow \boxed{n=4}$$

$$40. (a^n)^5 = \frac{1}{a^{10}} \Rightarrow a^{5n} = a^{-10} \Rightarrow 5n = -10 \Rightarrow n = \frac{-10}{5} = -2 \Rightarrow \boxed{n=-2}$$