

POTÊNCIAS NEGATIVAS

$$f(x) = \frac{1}{x^2} \longrightarrow f'(x) = ??$$

$$f(x) = \frac{1}{x^2} = x^{-2} \longrightarrow f'(x) = -2x^{-2-1} = -2x^{-3}$$

$x^n \rightarrow nx^{n-1}$

$$= -2 \cdot x^{-3}$$
$$= -2 \cdot \frac{1}{x^3} = -\frac{2}{x^3} //$$

$$2^2 \cdot 2^3 = 2^{2+3} = 2^5$$
$$\underbrace{2 \cdot 2 \cdot 2 \cdot 2 \cdot 2}_5 = 2^5$$

$$\left. \begin{aligned} \frac{2^2}{2^3} &= \frac{\cancel{2} \cdot \cancel{2} \cdot 1}{\cancel{2} \cdot \cancel{2} \cdot 2} = \frac{1}{2} = 2^{-1} \end{aligned} \right\}$$

$$\frac{2^2}{2^3} = 2^{2-3} = 2^{-1}$$

$$\frac{3}{x^2} = 3 \cdot \frac{1}{x^2} = 3 \cdot x^{-2}$$

$$\frac{5}{7x^6} = \frac{5}{7} \cdot \frac{1}{x^6} = \frac{5 \cdot x^{-6}}{7} \xrightarrow{\text{der.}} \frac{5 \cdot (-6)x^{-6-1}}{7} = -\frac{30}{7} \cdot x^{-7}$$

$$\frac{3}{5x^8} = \frac{3}{5} \cdot \frac{1}{x^8}$$

$$= -\frac{30}{7} \cdot \frac{1}{x^7} = -\frac{30}{7x^7} //$$

EXERCÍCIOS

25.1. Calcule as seguintes derivadas:

$$\text{a) } f(x) = \frac{1}{x^3}$$

$$\text{b) } f(x) = \frac{2}{x^3} - \frac{1}{x^4}$$

$$\text{c) } f(x) = \frac{3}{x^5} + \frac{1}{3}$$

$$\text{d) } f(x) = \frac{2}{x^3} - \frac{x^3}{2}$$

$$\text{e) } f(x) = \frac{3x^2}{4} - \frac{3}{4x^2} + \frac{3}{4}$$