

# Exercícios Propostos

$$\textcircled{1} \lim_{x \rightarrow 27} \frac{\sqrt[3]{x} - 1}{x - 2} = \frac{\lim_{x \rightarrow 27} \sqrt[3]{x} - 1}{\lim_{x \rightarrow 27} (x - 2)}$$

$$= \frac{\lim_{x \rightarrow 27} \sqrt[3]{x} - \lim_{x \rightarrow 27} 1}{\lim_{x \rightarrow 27} x - \lim_{x \rightarrow 27} 2}$$

$$= \frac{\sqrt[3]{27} - 1}{27 - 2} = \frac{3 - 1}{25} = \frac{2}{25} //$$

$$\textcircled{2} \lim_{x \rightarrow 2} \frac{2x^3 - 10x^2 + 8x + 1}{x^2 - 5x - 6}$$

$$= \frac{\lim_{x \rightarrow 2} 2x^3 - 10x^2 + 8x + 1}{\lim_{x \rightarrow 2} x^2 - 5x - 6}$$

$$= \frac{2 \cdot 2^3 - 10 \cdot 2^2 + 8 \cdot 2 + 1}{2^2 - 5 \cdot 2 - 6}$$

$$= \frac{2 \cdot 8 - 10 \cdot 4 + 16 + 1}{4 - 10 - 6} = \frac{7}{-12} = -\frac{7}{12} //$$

$$\textcircled{5}$$

$$\textcircled{3} \quad \lim_{x \rightarrow \frac{\pi}{4}} \frac{\frac{x}{2} \cdot \operatorname{tg} x}{1+x} = \lim_{x \rightarrow \frac{\pi}{4}} \frac{\frac{x}{2} \cdot \operatorname{tg} x}{\lim_{x \rightarrow \frac{\pi}{4}} (1+x)}$$

$$= \frac{\lim_{x \rightarrow \frac{\pi}{4}} \frac{x}{2} \cdot \lim_{x \rightarrow \frac{\pi}{4}} \operatorname{tg} x}{\lim_{x \rightarrow \frac{\pi}{4}} 1 + \lim_{x \rightarrow \frac{\pi}{4}} x} = \frac{\frac{\frac{\pi}{4}}{2} \cdot \operatorname{tg} \frac{\pi}{4}}{1 + \frac{\pi}{4}}$$

$$\lim_{x \rightarrow \frac{\pi}{4}} 1 + \lim_{x \rightarrow \frac{\pi}{4}} x$$

$$= \frac{\frac{\pi}{8} \cdot 1}{\frac{4 + \pi}{4}} = \frac{\frac{\pi}{8}}{\frac{4 + \pi}{4}}$$

$$= \frac{\pi}{8} \cdot \frac{4}{4 + \pi} = \frac{\pi}{2(4 + \pi)} = \frac{\pi}{8 + 2\pi}$$

⑥

$$\textcircled{4} \lim_{x \rightarrow 2} [\cos(x^2 - 5x + 6)]$$

$$= \cos \left[ \lim_{x \rightarrow 2} (x^2 - 5x + 6) \right]$$

$$= \cos(2^2 - 5 \cdot 2 + 6)$$

$$= \cos 0 = 1 //$$

$$\textcircled{5} \lim_{x \rightarrow -1} 3^{(x^3 + 3x + 2)}$$

$$= 3^{\lim_{x \rightarrow -1} (x^3 + 3x + 2)}$$

$$= 3^{[(-1)^3 + 3 \cdot (-1) + 2]}$$

$$= 3^{(-1 - 3 + 2)} = 3^{-2}$$

$$= \left(\frac{1}{3}\right)^2 = \frac{1}{9} //$$