

EXERCÍCIO 4



Utilizando a Regra da Cadeia e a Regra do Produto, calcule a primeira derivada da função

$$f(x) = 4x^3 \cdot \ln(5x+1).$$

$$\underbrace{4x^3}_f \cdot \underbrace{\ln(5x+1)}_g$$

$$\hookrightarrow (f \cdot g)' = f' \cdot g + f \cdot g'$$

$$\begin{aligned} f'(x) &= (4x^3)' \cdot \ln(5x+1) + 4x^3 \cdot (\ln(5x+1))' = \\ &= 12x^2 \cdot \ln(5x+1) + 4x^3 \cdot \frac{1}{5x+1} \cdot (5x+1)' = \end{aligned}$$

$$(\ln x)' = \frac{1}{x}$$

$$(\ln \square)' = \frac{1}{\square} \cdot \square'$$

$$= 12x^2 \ln(5x+1) + 4x^3 \cdot \frac{1}{5x+1} \cdot 5 =$$

$$= 12x^2 \ln(5x+1) + \frac{20x^3}{5x+1}$$

