



Araguatins - TO

## Exercícios sobre Derivadas

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### Turma 1ª fase de Bacharelado em Engenharia Agrônômica

Determine a derivada das funções indicadas:

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

$$2) f(x) = x^2 + \sqrt{x}$$

$$3) f(x) = x^3 \cos x$$

$$4) f(x) = x^3(2x^2 - 3x)$$

$$5) f(x) = \frac{2x+5}{4x}$$

$$6) f(x) = \left(\frac{2}{5}\right)^x$$

$$7) f(x) = 2^{3x-1}$$

$$8) f(x) = 3^x$$

$$9) f(x) = \text{sen}(x^2)$$

$$10) f(x) = \cos\left(\frac{1}{x}\right)$$

$$11) f(x) = (x^2 + 5x + 2)^7$$

$$12) f(x) = \left(\frac{3x+2}{2x+1}\right)^5$$

$$13) f(x) = \frac{1}{3}(2x^5 + 6x^{-3})^5$$

$$14) y = \ln(x^6 - 1)$$

$$15) y = \frac{1}{\sqrt[5]{x^3 - 1}}$$

$$16) y = \cos(x^3 - 4)$$

$$17) y = (x^3 - 6)^5$$

$$18) y = e^{x^2-3x}$$

Respostas

$$f'(x) = -2x^3 + 2x^2 - x$$

$$f'(x) = 2x + \frac{1}{2\sqrt{x}}$$

$$f'(x) = 3x^2 \cos x - x^3 \text{sen} x$$

$$f'(x) = 10x^4 - 12x^3$$

$$f'(x) = -\frac{5}{4x^2}$$

$$f'(x) = \left(\frac{2}{5}\right)^x \ln \frac{2}{5}$$

$$f'(x) = 2^{3x-1} \cdot 3 \ln 2$$

$$f'(x) = 3^x \ln 3$$

$$f'(x) = 2x \cdot \cos(x^2)$$

$$f'(x) = \frac{1}{x^2} \text{sen}\left(\frac{1}{x}\right)$$

$$f'(x) = 7(x^2 + 5x + 2)^6(2x + 5)$$

$$f'(x) = 5\left(\frac{3x+2}{2x+1}\right)^4 \cdot \frac{-1}{(2x+1)^2}$$

$$f'(x) = \frac{10}{3}(2x^5 + 6x^{-3})^4 \cdot (5x^4 - 9x^{-4})$$

$$y' = \frac{6x^5}{x^6 - 1}$$

$$y' = \frac{3x^2}{5\sqrt[5]{(x^3 - 1)^6}}$$

$$y' = -3x^2 \text{sen}(x^3 - 4)$$

$$y' = 15x^2(x^3 - 6)^4$$

$$y' = (2x-3) e^{x^2-3x}$$