

Teste especial!

Passatempo

1. Calcular a T.M.V. da função definida por $f(x) = 3x^2 - 4x + 1$ entre os pontos 2 e 5

$$f(x_0) = 2 \quad \text{com } x_0 = 2$$

$$f(x_0) = f(2) = 3 \cdot 2^2 - 4 \cdot 2 + 1 = 5$$

$$f(x_0 + \Delta x) = 5 \quad \text{com } x_0 + \Delta x = 5$$

$$f(x_0 + \Delta x) = f(5) = 3 \cdot 5^2 - 4 \cdot 5 + 1 = 56$$

$$T.M.V. = \frac{f(x_0 + \Delta x) - f(x_0)}{\Delta x}$$

$$T.M.V. = \frac{56 - 5}{3} = \frac{51}{3} = 17$$

2. Calcular a derivada da função definida por $f(x) = 3x^2 - 4x + 1$ no ponto

a) $x_0 = 2$

$$2^2 + 2 \cdot \Delta x + \Delta x^2$$

$$f(2) = 3 \cdot 2^2 - 4 \cdot 2 + 1 = 5$$

$$f(x_0 + \Delta x) = f(2 + \Delta x) = 3(2 + \Delta x)^2 - 4(2 + \Delta x) + 1 =$$

$$3(4 + 4\Delta x + \Delta x^2) - 4(2 + \Delta x) + 1$$

$$f = (12 + 12\Delta x + 3\Delta x^2) - (8 + 4\Delta x) + 1 = 3\Delta x^2 + 8\Delta x + 5$$

$$f'(x) = \lim_{\Delta x \rightarrow 0} \frac{f(x_0 + \Delta x) - f(x_0)}{\Delta x} = \frac{3\Delta x^2 + 8\Delta x + 5 - 5}{\Delta x} = \frac{3\Delta x^2 + 8\Delta x}{\Delta x}$$