

Calculo

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Examen

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Derivadas regla general de los 4 pasos

1. $y = 2x^3 - 3x + 9 \rightarrow f(x)$

$$y' = \frac{d}{dx}(2x^3) - \frac{d}{dx}(3x) + \frac{d}{dx}(9)$$

$$y' = 2 \frac{d}{dx}(x^3) - 3 \frac{d}{dx}(x)$$

$$y' = 2(3x^2) - 3(1)$$

$$y' = 6x^2 - 3$$

2. $y = 4/x^2$

$$y' = \frac{d}{dx}(4x^{-2})$$

$$y' = 4 \frac{d}{dx}(x^{-2})$$

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

$$y' = \frac{-8}{x^3}$$

3. $y = \frac{5}{4+x^2}$

$$y' = \frac{(4+x^2) \frac{d}{dx}(5) - (5) \frac{d}{dx}(4+x^2)}{(4+x^2)^2}$$

$$y' = \frac{0 - 5(2x)}{(4+x^2)^2}$$

$$y' = \frac{-10x}{(4+x^2)^2}$$

Scorba

$$4. \quad y = x + \frac{2}{x}$$

$$y' = \frac{d}{dx}(x) + \frac{d}{dx}(2x^{-1})$$

$$y' = 1 + (2 \cdot -1x^{-2})$$

$$y' = 1 - \frac{2}{x^2}$$

$$5. \quad y = (a - bx)^2 = a^2 - 2abx + b^2x^2$$

$$y' = \frac{d}{dx}(a^2) - \frac{d}{dx}(2abx) + \frac{d}{dx}(b^2x^2)$$

$$y' = -2ab + 2b^2x$$

$$6. \quad y = \frac{2}{x^2 + 4}$$

$$y' = \frac{(x^2 + 4) \frac{d}{dx}(2) - (2) \frac{d}{dx}(x^2 + 4)}{(x^2 + 4)^2}$$

$$y' = \frac{-2(2x)}{(x^2 + 4)^2} = \frac{-4x}{(x^2 + 4)^2}$$

$$7. \quad y = (1 + 2x)^2 = 1 + 4x + 4x^2$$

$$y' = \frac{d}{dx} (1) + \frac{d}{dx} (4x) + \frac{d}{dx} (4x^2)$$

$$y' = 0 + 4 + 4(2x)$$

$$y' = 4 + 8x$$

$$8. \quad y = \frac{2-x}{x-2}$$

$$y' = \frac{(x-2) \frac{d}{dx} (2-x) - (2-x) \frac{d}{dx} (x-2)}{(x-2)^2}$$

$$y' = \frac{(x-2)(-1) - (2-x)(1)}{(x-2)^2}$$

$$y' = \frac{-x+2 - 2+x}{(x-2)^2} = \frac{0}{(x-2)^2} = \underline{\underline{0}}$$