



# Probleuario

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## Problemas

$$1. y = x^5 + 5x^4 - 10x^2 + 6$$

$$y' = \frac{d}{dx}(x^5) + 5 \frac{d}{dx}(x^4) - 10 \frac{d}{dx}(x^2) + \frac{d}{dx}(6)$$

$$= 5x^4 + 20x^3 - 20x$$

$$2. y = 3x^{1/2} - x^{3/2} + 2x^{-1/3}$$

$$y' = 3 \frac{d}{dx}(x^{1/2}) - \frac{d}{dx}(x^{3/2}) + 2 \frac{d}{dx}(x^{-1/3})$$

$$y' = \frac{3}{2} x^{-1/2} - \frac{3}{2} x^{1/2} - \frac{2}{3} x^{-4/3}$$

$$y' = \frac{3}{2\sqrt{x}} - \frac{3}{2}\sqrt{x} - \frac{2}{3}\sqrt[3]{x^4}$$

$$3. y = \frac{1}{2}x^{-2} + 4x^{-1/2}$$

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

$$y' = -x - 2x^{-3/2}$$

$$y' = -\frac{1}{x} - \frac{2}{\sqrt{x^3}}$$

$$4. y' = \sqrt{2x} + 2\sqrt{x}$$

$$y = \sqrt{2} \sqrt{x} + 2\sqrt{x}$$

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

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

$$y' = \frac{\sqrt{2}}{2\sqrt{x}} + \frac{1}{\sqrt{x}} = \frac{1}{2} \frac{\sqrt{2}}{\sqrt{x}} + \frac{1}{\sqrt{x}}$$

$$5. F(t) = \frac{2}{\sqrt{t}} + \frac{6}{\sqrt[3]{t}}$$

$$F'(2) = 2 \cdot 2^{-1/2} + 6 \cdot 2^{-1/3}$$

$$F'(t) = 2t^{-3/2} + 6t^{-4/3}$$

$$F'(t) = \frac{2}{\sqrt{t^3}} + \frac{6}{\sqrt[3]{t^4}}$$

$$6. y = (1-5x)^6$$

$$y' = 6(1-5x)^5 \cdot \frac{d}{dx}(1-5x)$$

$$y' = -30(1-5x)^5$$

$$u^n = n(u)^{n-1} \frac{du}{dx}$$

$$7. f(x) = (3x - x^3 + 1)^4$$

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

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

$$f'(x) = (12 - 12x^2) (3x - x^3 + 1)^3$$

$$8. y = (3 + 4x - x^2)^{1/2}$$

$$y' = \frac{1}{2} (3 + 4x - x^2)^{-1/2} \frac{d}{dx} (3 + 4x - x^2)$$

$$y' = \frac{1}{2} (3 + 4x - x^2)^{1/2} \cdot (4 - 2x)$$

$$y' = \frac{4 - 2x}{2\sqrt{3 + 4x - x^2}}$$