



Problematario

Nombre del alumno: Alma Camila
Hernández Méndez

Nombre del tema: Derivadas

Parcial: 2

Nombre de la materia: calculo

Nombre del profesor: Luis Enrique
Meneses

4to cuatri rh

$$1- f(x) = 4x^3 + (2x-3)(x^2+1) - 7x + 5$$

$$f'(x) = \frac{d}{dx}(4x^3) + (2x-3) \cdot (x^2+1) - (7x+5) \quad (1)$$

$$f'(x) = \frac{d}{dx}(4x^3 + 2x^3 + 2x - 3x^2 - 3 - 7x + 5)$$

$$f'(x) = \frac{d}{dx}(6x^3 + 2x - 3x^2 - 3 - 7x + 5)$$

$$f'(x) = \frac{d}{dx}(6x^3 - 5x - 3x^2 + 2)$$

$$f'(x) = \frac{d}{dx}(6x^3 - 5x - 3x^2 + 2)$$

utiliza la regla de diferenciación

$$\frac{d}{dx}(f+g) = \frac{d}{dx}(f) + \frac{d}{dx}(g) \quad (2) \quad f'(x) = \frac{d}{dx}(6x^3) + \frac{d}{dx}(-5x) + \frac{d}{dx}(-3x^2) + \frac{d}{dx}(2)$$

$$(3) \quad f'(x) = 6x \cdot 3x^2 + \frac{d}{dx}(-5x) + \frac{d}{dx}(-3x^2) + \frac{d}{dx}(2)$$

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

$$f'(x) = 6x \cdot 3x^2 - 5 - 3x \cdot 2x + \frac{d}{dx}(2) = f'(x) = 6x \cdot 3x^2 - 5 - 3 \cdot 2x + 0$$

$$(5) \quad f'(x) = 6x \cdot 3x^2 - 5 - 3 \cdot 2x + 0 = f'(x) = 18x^2 - 6x - 5$$

$$\boxed{f'(x) = 18x^2 - 6x - 5}$$

$$2- g(x) = 5x^4 - 3x \cdot (x-2) + (4x+1)(x^2-1) - 8$$

$$g'(x) = \frac{d}{dx}(5x^4 - 3x^2 + 6x + (4x+1)(x^2-1) - 8) \quad (1)$$

$$g'(x) = \frac{d}{dx}(5x^4 - 3x^2 + 6x + 4x^3 - 4x + x^2 - 1 - 8)$$

$$g'(x) = \frac{d}{dx}(5x^4 - 2x^2 + 6x + 4x^3 - 4x - 1 - 8)$$

$$g'(x) = \frac{d}{dx}(5x^4 - 2x^2 + 2x + 4x^3 - 1 - 8)$$

$$g'(x) = \frac{d}{dx}(5x^4 - 2x^2 + 2x + 4x^3 - 9)$$

(2) Utiliza la regla de diferenciación

$$\frac{d}{dx}(f+g) = \frac{d}{dx}(f) + \frac{d}{dx}(g) \quad g'(x) = \frac{d}{dx}(5x^4) + \frac{d}{dx}(-2x^2) + \frac{d}{dx}(2x) + \frac{d}{dx}(4x^3) - \frac{d}{dx}(9)$$

$$(3) \quad g'(x) = 5x^4 \cdot 4x^3 + \frac{d}{dx}(-2x^2) + \frac{d}{dx}(2x) + \frac{d}{dx}(4x^3) - \frac{d}{dx}(9)$$

$$g'(x) = 5x^4 \cdot 4x^3 - 2x \cdot 2x + \frac{d}{dx}(2x) + \frac{d}{dx}(4x^3) - \frac{d}{dx}(9)$$

$$g'(x) = 5x^4 \cdot 4x^3 - 2x \cdot 2x + 2 + \frac{d}{dx}(4x^3) - \frac{d}{dx}(9) \quad ; \quad g'(x) = 5x^4 \cdot 4x^3 - 2x \cdot 2x + 2 + 4x^2 \cdot 3x^2 - \frac{d}{dx}(9)$$

$$g'(x) = 5x^4 \cdot 4x^3 - 2x \cdot 2x + 2 + 4x^2 \cdot 3x^2 - 0$$

$$g'(x) = 20x^7 + 12x^2 - 4x + 2$$

$$\boxed{g'(x) = 20x^7 + 12x^2 - 4x + 2}$$



TÍTULO _____ FECHA _____

$$3. h(x) = 6x^5 + (\lambda - 1) \times (3x^3 + 2) - 4x^2 + 9$$

$$h'(x) = \frac{d}{d\lambda} (6x^5) + (\lambda - 1) \times (3x^3 + 2) - (4x^2 + 9)$$

$$h'(x) = \frac{d}{dx} (6x^5 + 3x^4 + 2x - 3x^3 - 2 - 4x^2 + 9)$$

Utilizo la regla de diferenciación

$$\frac{d}{dx} (f+g) = \frac{d}{dx} (f) + \frac{d}{dx} (g)$$

$$h'(x) = \frac{d}{d\lambda} (6x^5) + \frac{d}{dx} (3x^4) + \frac{d}{dx} (-3x^3) + \frac{d}{dx} (2) + \frac{d}{dx} (-4x^2)$$

$$h'(x) = 6x^5 \lambda^4 + 3x^4 \lambda^3 + 2 - 3x^3 \lambda^2 + 0 + \frac{d}{dx} (-4x^2)$$

$$h'(x) = 6x^5 \lambda^4 + 3x^4 \lambda^3 + 2 - 3\lambda^3 x^2 + 0 - 4x^2 \lambda$$

$$h'(x) = 30x^4 + 12x^3 - 9x^2 - 8x + 2$$

$$4. p(x) = x^6 - 2x^4 - 2x + (x+2)(x^2 - x) + 10$$

$$p'(x) = \frac{d}{d\lambda} (x^6 - 2x^4 - 2x) + (x+2) \times (x^2 - x) + (10)$$

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

$$p'(x) = \frac{d}{dx} (x^6 - 2x^4 - 4x + x^3 + x^2 + 10)$$

Utilizo la regla de diferenciación

$$\frac{d}{dx} (f+g) = \frac{d}{dx} (f) + \frac{d}{dx} (g)$$

$$p'(x) = \frac{d}{dx} (x^6) + \frac{d}{dx} (-2x^4) + \frac{d}{dx} (-4x) + \frac{d}{dx} (x^3) + \frac{d}{dx} (x^2) + \frac{d}{dx} (10)$$

$$p'(x) = 6x^5 - 2x^4 \lambda^3 - 4 + 3x^2 + 2x + \frac{d}{dx} (10)$$

$$p'(x) = 6x^5 - 2x^4 \lambda^3 - 4 + 3x^2 + 2x + 0$$

$$p'(x) = 6x^5 - 8x^3 + 3x^2 + 2x - 4$$

$$5. q(x) = 3x^4 + (2x+3)(x-1) - 5x + 12$$

$$q'(x) = \frac{d}{d\lambda} (3x^4) + (2x+3) \times (x-1) - (5x+12)$$

$$q'(x) = \frac{d}{dx} (3x^4 + 2x^2 - 2x + 3x - 3 - 5x + 12)$$

$$q'(x) = \frac{d}{dx} (3x^4 + 2x^2 - 4x + 9)$$

$$q'(x) = \frac{d}{dx} (3x^4 + 2x^2 - 4x + 9)$$

Utilizo la regla de diferenciación

$$\frac{d}{dx} (f+g) = \frac{d}{dx} (f) + \frac{d}{dx} (g)$$

$$q'(x) = \frac{d}{dx} (3x^4) + \frac{d}{dx} (2x^2) + \frac{d}{dx} (-4x) + \frac{d}{dx} (9)$$

$$q'(x) = 3x^4 \lambda^3 + 2x^2 \lambda - 4 + \frac{d}{dx} (9)$$

$$q'(x) = 3x^4 \lambda^3 + 2x^2 \lambda - 4 - 0$$

$$q'(x) = 12x^3 + 4x - 4$$

$$7: g(x) = x^4 - 5x \cdot (x^3 + 2) + (2x - 1)(x^2 + x) + 6$$

$$\textcircled{1} g'(x) = \frac{d}{dx} (x^4 - 5x)(x^3 + 2) + (2x - 1)x(x^2 + x) \text{ Quitar los } ()$$

$$\textcircled{2} g'(x) = \frac{d}{dx} (x^4 - 5x^4 - 10x + 2x^3 + 2x^2 - x^2 - x) \text{ Agrupar}$$

$$\textcircled{3} g'(x) = \frac{d}{dx} (-4x^4 - 11x + 2x^3 + x^2) \text{ Utilizar la regla de derivación}$$

$$\textcircled{4} g'(x) = \frac{d}{dx} (-4x^4) + \frac{d}{dx} (-11x) + \frac{d}{dx} (2x^3) + \frac{d}{dx} (x^2) \text{ Simplificar}$$

$$\textcircled{5} g'(x) = -4 \times 4x^3 - 11 + 2 \times 3x^2 + 2$$

$$g'(x) = -16x^3 + 6x^2 + 2x - 11$$

$$6: r(x) = 7x^5 + (4x - 2)(x^2 + 3x) - x^3 + 15$$

$$\textcircled{1} r'(x) = \frac{d}{dx} (7x^5) + (4x - 2)x(x^2 + 3x) - (x^3 + 15)$$

$$\textcircled{2} r'(x) = \frac{d}{dx} (7x^5 + 4x^3 + 12x^2 - 2x^2 - 6x - x^3 + 15)$$

$$r'(x) = \frac{d}{dx} (7x^5 + 3x^3 + 10x^2 - 6x + 15)$$

$$r'(x) = \frac{d}{dx} (7x^5 + 3x^3 + 10x^2 - 6x + 15)$$

Hay que utilizar la regla de derivación

$$\textcircled{3} r'(x) = \frac{d}{dx} (7x^5) + \frac{d}{dx} (3x^3) + \frac{d}{dx} (10x^2) + \frac{d}{dx} (-6x) + \frac{d}{dx} (15)$$

$$r'(x) = 7 \times 5x^4 + 3 \times 3x^2 + 10 \times 2x - 6 + 0$$

$$r'(x) = 35x^4 + 9x^2 + 20x - 6$$

$$8: t(x) = 3x^2 + (x + 4)(x^3 - x^2) - 9x + 11$$

$$\textcircled{1} \text{ Simplificar } t'(x) = \frac{d}{dx} (3x^2) + (x + 4)x(x^3 - x^2) - 9x + 11$$

$$\textcircled{2} \text{ Agrupar } t'(x) = \frac{d}{dx} (3x^2 + x^4 - x^3 + 4x^3 - 4x^2 - 9x + 11)$$

Utilizo las reglas de derivación

$$t'(x) = \frac{d}{dx} (x^2) + \frac{d}{dx} (x^4) + \frac{d}{dx} (-x^3) + \frac{d}{dx} (4x^3) + \frac{d}{dx} (-4x^2) + \frac{d}{dx} (-9x) + \frac{d}{dx} (11)$$

$$\textcircled{4} \text{ Simplifica } t'(x) = -2x + 4x^3 + 3 \times 3x^2 - 9 + 0$$

$$t'(x) = 4x^3 + 9x^2 - 2x - 9$$



$$9. U(x) = 6x^3 - (3x + 5)(x^2 - 1) + 4x + 8$$

① Simplificar $U'(x) = \frac{d}{dx}(6x^3 - (3x + 5)(x^2 - 1) + 4x + 8)$

② Quitar los paréntesis

$$U'(x) = \frac{d}{dx}(6x^3 - (3x^3 - 3x + 5x^2 - 5) + 4x + 8)$$

③ Agrupar términos $U'(x) = \frac{d}{dx}(3x^3 + 7x - 5x^2 + 13)$

④ Utilizar las reglas de diferenciación

$$U'(x) = \frac{d}{dx}(3x^3) + \frac{d}{dx}(7x) + \frac{d}{dx}(-5x^2) + \frac{d}{dx}(13)$$

⑤ Simplificar $U'(x) = 3x \cdot 3x^2 + 7 - 5 \cdot 2x + 0$

$$\boxed{U'(x) = 9x^2 - 10x + 7}$$

$$10. V(x) = 2x^5 + (x - 3)(2x^4 + x^2) - 7x + 13$$

① Simplificar $V'(x) = \frac{d}{dx}(2x^5 + (x - 3)(2x^4 + x^2) - 7x + 13)$

② Quitar los "C".

$$V'(x) = \frac{d}{dx}(2x^5 + 2x^5 + x^3 - 6x^4 - 3x^2 - 7x + 13)$$

③ Agrupar $V'(x) = \frac{d}{dx}(4x^5 + x^3 - 6x^4 - 3x^2 - 7x + 13)$

④ Utilizar las reglas de diferenciación

$$V'(x) = \frac{d}{dx}(4x^5) + \frac{d}{dx}(x^3) + \frac{d}{dx}(-6x^4) + \frac{d}{dx}(-3x^2) + \frac{d}{dx}(-7x) + \frac{d}{dx}(13)$$

⑤ Simplificar $V'(x) = 4x^5 \cdot 5x^4 + 3x^2 - 6x^4 \cdot 4x^3 - 3x \cdot 2x - 7 + 0$

$$\boxed{V'(x) = 20x^4 - 24x^3 + 3x^2 - 6x - 7}$$