

UDS

Calculo

4to cuatrimestre

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Derivadas.

1- $f(x) = 4x^3 + (2x-3)(x^2+1) - 7x + 5$
 $4x^3 + 2x^3 + 2x - 3x^2 - 3 - 7x + 5$
 $6x^3 - 3x^2 - 5x + 2$

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

$$f'(x) = 18x^2 - 6x - 5$$

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

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

$$g'(x) = 20x^3 + 12x^2 - 4x + 2$$

3- $h(x) = 6x^5 + (x-1)(3x^3+2) - 4x^2 + 9$
 $6x^5 + 3x^4 + 2x - 3x^3 - 2 - 4x^2 + 9$
 $6x^5 + 3x^4 - 3x^3 - 4x^2 + 2x - 11$

$$\frac{d}{dx} = (6x^5) + (3x^4) - (3x^3) - (4x^2) + (2x) - (11)$$

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

$$4 - P(x) = x^6 - 2x \cdot (x^3 + 1) + (x+2)(x^2 - x) + 10$$

$$x^6 - 2x^4 - 2x + x^3 - x^2 + 2x^2 - 2x + 10$$

$$x^6 - 2x^4 + x^3 + x^2 - 4x + 10$$

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

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

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

$$3x^4 + 2x^2 + 3x - 2x - 3 - 5x + 12$$

$$3x^4 + 2x^2 - 4x + 9$$

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

$$Q(x) = 12x^3 + 4x - 4$$

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

$$7x^5 + 4x^3 + 12x^2 - 2x^2 - 6x - x^3 + 15$$

$$7x^5 - 3x^3 - 10x^2 - 6x + 15$$

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

$$Y(x) = 35x^4 - 9x^2 - 20x - 6$$

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

$$x^4 - 5x^4 - 10x + 2x^3 + 2x^2 - x^2 - x + 6$$

$$-4x^4 + 2x^3 + x^2 - 11x + 6$$

$$\frac{d}{dx} (-4x^4) - (2x^3) + (x^2) - (11x) + (6)$$

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

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

$$3x^2 + x^4 - x^3 + 4x^3 - 3x^2 - 9x + 11$$

$$x^4 - 3x^3 - x^2 - 9x + 11$$

$$\frac{d}{dx} = (x^4) - (3x^3) - (x^2) - (9x) + (11)$$

$$4x^3 - 9x^2 - 2x - 9$$

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

$$6x^3 - 3x^3 - 3x + 5x^2 + 5 + 4x + 8$$

$$3x^3 - 5x^2 + 7x + 13$$

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

$$9x^2 - 10x + 7$$

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

$$2x^5 + 2x^5 + x^3 - 6x^4 - 3x^2 - 7x + 13$$

$$4x^5 - 6x^4 + x^3 - 3x^2 - 7x + 13$$

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

$$20x^4 - 24x^3 + 3x^2 - 6x - 7$$

$$11 - f(x) = (3x-2)(x^2+x+1)$$

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

$$(3x-2)(x^2+x+1)(3)$$

$$= 6x^2 + 3x - 4x - 2 + 3x^2 + 3x + 3$$

$$f(x) = 9x^2 + 2x + 1$$

$$12- g(x) = (2x+4)(x^3-x+5)$$

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

$$= 6x^3 - 2x + 12x^2 - 4 + 2x^3 - 2x + 10$$

$$g(x) = 8x^3 + 12x^2 - 4x + 6$$

$$13- h(x) = (5x-1)(x^2+2x+3)$$

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

$$= 10^2 + 10x - 2x - 2 + 5x^2 + 10x + 15$$

$$h(x) = 15^2 + 18x + 13$$

$$14- p(x) = (4x+6)(x^3-2x+1)$$

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

$$= 12^3 - 8x + 18x^2 - 12 + 4x^3 - 8x + 4$$

$$p(x) = 16x^3 + 18x^2 - 16x - 8$$

$$15- q(x) = (x-2)(3x^2+x-4)$$

$$\frac{d}{dx} (x-2)(3x^2+x-4) = (x-2)(6x+1) + (3x^2+x-4)(1) \\ = 6x^2 - 12x + x - 2 + 3x^2 + x - 4$$

$$q(x) = 9x^2 - 10x - 6$$

$$16 - f(x) = \frac{3x-2}{x^2+1}$$

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

$$f'(x) = \frac{(3x^2+3-6x^2+4)}{(x^2+1)^2}$$

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

$$17 - g(x) = \frac{5x^3-4}{x+2}$$

$$g'(x) = \frac{5x^3-4x^2+24x^2}{(x+2)^2}$$

$$g'(x) = \frac{15x^2+4(-1)x^2}{(x+2)^2}$$

$$= \frac{15x^2-4x^2}{(x+2)^2}$$

$$= \frac{15x^2-4}{(x+2)^2}$$

$$18 - h(x) = \frac{2x^2-3}{x^2+x-1}$$

$$2x^2 = 4x$$

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

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

$$h'(x) = \frac{4x+3}{x+1^2}$$

19- $P(x) = \frac{x^4 + 1}{3x - 5}$

$$P(x) = x^4 + \left(\frac{1}{3}\right) (3x - 5)^{-1}$$

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

$$P(x) = \frac{4x^3 - 3}{3x - 5^2}$$

20- $Q(x) = \frac{6x^5 - 4x}{x^2 + 1}$

$$6x^5 = 30x^4$$

$$\frac{(-4x) / (x^2 + 1)}{(x^2 + 1)^2} = -4(1)(x^2 + 1) - (-4x)(2x) \times$$

$$-4x / (x^2 + 1) = (4x^2 - 4) / (x^2 + 1)^2$$

$$Q(x) = \frac{30x^4 + (4x^2 - 4)}{x^2 + 1^2}$$