



Mi Universidad

Problemas

Nombre del Alumno: Brayan Yahel Fernández López

Nombre del tema: :

Parcial: III

Nombre de la Materia: Cálculo

Nombre del profesor:

Nombre de la Licenciatura: Recursos humanos

Cuatrimestre: IV

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

$$u = 6x^5 - 4x$$

$$v = x^2 + 1$$

$$du = 30x^4 - 4$$

$$dv = 2x$$

$$= \frac{(6x^5 - 4x)(2x) - (x^2 + 1)(30x^4 - 4)}{(x^2 + 1)^2}$$

$$= \frac{12x^6 - 8x^2 - [30x^6 + 30x^4 - 4x^2 - 4]}{(x^2 + 1)^2}$$

$$= \frac{12x^6 - 8x^2 - 30x^6 - 30x^4 + 4x^2 + 4}{(x^2 + 1)^2}$$

$$= \frac{18x^6 - 30x^4 - 4x^2 + 4}{(x^2 + 1)^2}$$

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

$$U = x^4 + 1$$

$$dU = 4x^3$$

$$V = 3x - 5$$

$$dV = 3$$

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

$$= \frac{3x^4 + 3 - [12x^4 - 20x^3]}{(3x - 5)^2}$$

$$= \frac{3x^4 + 3 - 12x^4 + 20x^3}{(3x - 5)^2}$$

$$= \frac{-9x^4 + 20x^3 + 3}{(3x - 5)^2}$$

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

$$U = 2x^2 - 3$$

$$V = x^2 + x - 1$$

$$dU = 4x$$

$$dV = 2x + 1$$

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

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

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

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

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

$$u = 5x^3 - 4$$

$$v = x + 2$$

$$du = 15x^2$$

$$dv = 1$$

$$= \frac{(5x^3 - 4)(1) - (x + 2)(15x^2)}{(x + 2)^2}$$

$$= \frac{5x^3 - 4 - [15x^3 + 30x^2]}{(x + 2)^2}$$

$$= \frac{5x^3 - 4 - 15x^3 - 30x^2}{(x + 2)^2}$$

$$= \frac{-10x^3 - 30x^2 - 4}{(x + 2)^2}$$

$$15. \quad g(x) = (x-2)(3x^2+x-4)$$

$$du = \frac{d}{dx}(x-2) = 1$$

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

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

$$= 6x^2 - 12x + 1x - 2 + 3x^2 + x - 4$$

$$= 6x^2 + 3x^2 - 12x + 1x + x - 4 - 2$$

$$= 9x^2 - 10x - 6$$

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

$$u = 3x-2$$

$$v = x^2+1$$

$$du = 3$$

$$dv = 2x$$

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

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

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

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

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

$$u = f(x) = (3x - 2) = 3$$

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

$$du = \frac{d}{dx} (3x - 2) = 3$$

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

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

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

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

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

$$= 9x^2 + 2x + 1$$

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

$$du = \frac{d}{dx} (2x + 4) = 2$$

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

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

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

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

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