



**Mi Universidad**

## **probleuario**

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*Nombre del tema ... unidad 3*

*Parcial ...tercero*

*Nombre de la Materia ...calculo*

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*Nombre de la Licenciatura...bachillerato en recursos humanos*

*Cuatrimestre...cuarto*

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

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

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

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

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

$$\begin{aligned} &= (3x-2)(2x+1) + (x^2+x+1)(3) \\ &= 6x^2 - 4x + 3x - 2 + 3x^2 + 3x + 3 \\ &= 6x^2 + 3x^2 - 4x + 3x + 3x + 3 - 2 \\ &= 9x^2 + 2x + 1 \end{aligned}$$

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

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

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

$$\begin{aligned} &= (2x+4)(3x^2-1) + (x^3-x+5)(2) \\ &= 6x^3 + 12x^2 - 2x - 4 + 2x^3 - 2x + 10 \\ &= 6x^3 + 2x^3 + 12x^2 - 2x - 2x + 10 - 4 \\ &= 8x^3 + 12x^2 - 4x + 6 \end{aligned}$$

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

$$du = \frac{d}{dx} (5x-1) = 5$$

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

$$\begin{aligned} &= (5x-1)(2x+2) + (x^2+2x+3)(5) \\ &= 10x^2 - 2x + 10x - 2 + 5x^2 + 10x + 15 \\ &= 10x^2 + 5x^2 + 10x + 10x - 2 + 15 - 2 \\ &= 15x^2 + 20x + 11 \end{aligned}$$



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

$$du = \frac{d}{dx} (4x+6) = 4$$

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

$$\begin{aligned} &= (4x+6)(3x^2-2) + (x^3-2x+1)(4) \\ &= 12x^3 + 18x^2 - 8x - 12 + 4x^3 - 8x + 4 \\ &= 12x^3 + 4x^3 + 18x^2 - 8x - 8x - 12 + 4 \\ &= 16x^3 + 18x^2 - 16x - 8 \end{aligned}$$

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

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

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

$$\begin{aligned} &= (x-2)(6x+1) + (3x^2+x-4)(1) \\ &= 6x^2 - 12x + x - 2 + 3x^2 + x - 4 \\ &= 6x^2 + 3x^2 - 12x + x + x - 4 - 2 \\ &= 9x^2 - 10x - 6 \end{aligned}$$

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

$$u = 3x-2 \quad v = x^2+1$$

$$du = 3 \quad dv = 2x$$

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

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

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

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



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

$$u = 5x^3 - 4 \quad v = x + 2$$

$$du = 15x^2 \quad dv = 1$$

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

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

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

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

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

$$u = 2x^2 - 3 \quad v = x^2 + x - 1$$

$$du = 4x \quad dv = 2x + 1$$

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

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

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

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



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

$$u = x^4 + 1 \quad v = 3x - 5$$

$$du = 4x^3 \quad dv = 3$$

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

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

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

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

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

$$u = 6x^5 - 4x \quad v = x^2 + 1$$

$$du = 30x^4 - 4 \quad dv = 2x$$

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

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

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

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