

Matemática
PROBLEMATARIO

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$$\textcircled{1} y = 2x^3 - 6x^2 - 7x + 11$$

$$u + v - w$$

$$u = 2x^3$$

$$du = 6x^2$$

$$v = 6x^2$$

$$dv = -12x$$

$$w = -7x$$

$$dw = -7$$

$$y' = 6x^2 - 12x + 7$$

$$y' = -6x + 7$$

$$\textcircled{2} y = \frac{11}{4}x^3 + \frac{7}{3}x^2$$

$$y' = \frac{33}{4}x^2 + \frac{14}{3}x$$

$$\textcircled{3} y = 11 - 2x^2 - 6x^3$$

$$u = 11$$

$$du = 0$$

$$y' = -4x + 18x$$

$$v = -2x^2$$

$$dv = -4x$$

$$w = -6x^3$$

$$dw = 18x$$

$$y' = 14x$$

$$\textcircled{4} y = \frac{x}{(x^2 - 8x)^2}$$

$$u = x$$

$$du = 1$$

$$v = x^2 - 8x$$

$$dv = 2x - 8$$

$$\frac{(x^2 - 8x)(1) - (x)(2x - 8)}{(x^2 - 8x)^2}$$

$$\frac{x^2}{(x^2 - 8x)^2}$$

$$y' = \frac{x^2 - 8x - 2x^2 + 8x}{(x^2 - 8x)^2} =$$

$$\textcircled{5} \frac{5}{3x-4}$$

$$u=5 \quad v=3x-4$$

$$du=0 \quad dv=3$$

$$y' = \frac{(3x-4)(0) - 5(3)}{(3x-4)^2}$$

$$y' = \frac{-15}{(3x-4)^2}$$

$$\textcircled{6} y = (3x+2)/(2x-1)$$

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

$$du = 3x-1 \quad dv = 2$$

$$v^2 = (2x-1)^2$$

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

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

$$\textcircled{7} y = \frac{(3x^2+1)}{2x} = \frac{(2x)(6x) - (3x^2+1)(2)}{(2x)^2}$$

$$= \frac{12x^2 - 6x^2 - 2}{4x^2}$$

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

$$\textcircled{8} y = \frac{5}{(4+x^2)}$$

$$u = 5 \quad du = 0$$

$$v = 4+x^2 \quad dv = 2x$$

$$y' = \frac{(4+x^2)(0) - (5)(2x)}{(4+x^2)^2} \quad y' = \frac{-10x}{(4+x^2)^2}$$

$$\textcircled{9} y = (1+2x)^2$$

$$u = 1+2x$$

$$n = 2$$

$$n-1 = 1$$

$$(1+2x)^{2-1}$$

$$y' = 1+2x$$

$$\textcircled{10} \frac{3}{5}x^2 - \frac{3}{4} + \frac{1}{8}$$

$$\frac{3}{5} \frac{d}{dx}(x^2) - \frac{3}{4} \frac{d}{dx}(x) + \frac{d}{dx}\left(\frac{1}{8}\right)$$

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

$$\frac{6}{5}x - \frac{3}{4}$$

$$(11) y = \frac{2x^2}{\tan x^2}$$

$$y' = \frac{4x(\tan x^2 - x^2 \sec^2 x^2)}{(\tan x^2)^2}$$

$$u = 2x^2 \quad v = \tan x^2$$

$$du = 4x \quad dv = 2x \sec^2 x^2$$

$$v^2 = (\tan x^2)^2$$

$$y' = \frac{4x \tan x^2 - 4x^3 \sec^2 x^2}{(\tan x^2)^2}$$

$$(12) 3x^2 \cos 3x^2$$

sen u. v

$$u = 3x^2$$

$$v = \cos 3x^2$$

$$\text{sen } 3x^2 \cdot 6x \quad (y' = \text{sen } 18x^3)$$

$$(13) \text{sen } x^2 \cos x^2$$

$$u = \text{sen } x^2 \quad du = 2x \cos x^2$$

$$v = \cos x^2 \quad dv = -2x \text{sen } x^2$$

$$y' = (\text{sen } x^2)(2x \cos x^2)$$

$$(14) y = \cot 3x^3$$

$$y' = -9x^2 \csc^2 3x^3$$

$$y' = \csc^2 3x^3 \cdot \frac{d}{dx}(3x^3)$$

$$(15) y = \sqrt{2x^3 \cos x^2}$$

$$u = \sqrt{2x^3} \cdot \sqrt{\cos x^2}$$

$$v = \sqrt{\cos x^2}$$

$$u = (2x^3)$$

$$u = (2x^3)^{1/2}$$

$$v = (\cos x^2)^{1/2}$$

$$dv = \frac{1}{2} (\cos x^2)^{-1/2} \cdot 2x \operatorname{sen} x^2$$

$$u = 2x$$

$$du = 3x^{1/2}$$

$$dv = \frac{x \operatorname{sen} x^2}{\sqrt{\cos x^2}}$$

$$du = 3\sqrt{x}$$

$$(16) \sqrt{2x^3} \sec 2x$$

$$y' = (\sec 2x \cdot 2x^3 \cot 2x + 6x)$$

$$(17) 2x^3 \sqrt{\cos x^2}$$

$$2x^3 \cos x^2 \cdot x^2$$

$$6x \operatorname{sen} 2x^3 + 6x = y' = \sqrt{12x^2 \operatorname{sen} 2x^3}$$

$$(18) 4 \sec 2x^4$$

$$u = 4$$

$$v = \sec 2x^4$$

$$\boxed{\csc 4 \cdot 4x \cot 2x^4 + 0}$$

$$(19) y = (\cos 2x^3)^3$$

$$((6x \operatorname{sen} 2x^3) (63)^3)$$

$$(20) y = (\operatorname{sen} x^2)^{-2}$$

$$y = (\operatorname{sen} x^2)^{-2}$$

$$n = -2$$

$$n-1 = -3$$

$$u = \operatorname{sen} x^2$$

$$du = 2x \cos x^2$$

$$y' = -2(\operatorname{sen} x^2)^{-3} \cdot 2x \cos x^2$$

$$y' = \frac{-2(2x \cos x^2)}{(\operatorname{sen} x^2)^3}$$

$$y' = \frac{4x \cos x^2}{(\operatorname{sen} x^2)^3}$$