

Rainaldo urullo 2º ECU

Pregunta 1

$$y = \sin(\ln(x)) + \cos(\ln(x))$$

$$y' = \cos(\ln(x)) \cdot \frac{1}{x} + (-\sin(\ln(x))) \cdot \frac{1}{x}$$

$$y' = \frac{1}{x} \cdot (\cos(\ln(x)) - \sin(\ln(x)))$$

$$y' = \frac{\cos(\ln(x)) - \sin(\ln(x))}{x}$$

$$y'' = \frac{(\cos(\ln(x)) - \sin(\ln(x)))' \cdot x - (\cos(\ln(x)) - \sin(\ln(x))) \cdot 1}{x^2}$$

$$y'' = \frac{(-\sin(\ln(x)) \cdot \frac{1}{x} - \cos(\ln(x)) \cdot \frac{1}{x}) \cdot x - (\cos(\ln(x)) - \sin(\ln(x)))}{x^2}$$

$$y'' = \frac{-2 \cos(\ln(x))}{x^2}$$

$$\frac{-2 \cos(\ln(x))}{x^2} \cdot x^2 + \frac{\cos(\ln(x)) - \sin(\ln(x))}{x} \cdot x + \sin(\ln(x)) + \cos(\ln(x)) = 0$$

$$-2 \cos(\ln(x)) + \cos(\ln(x)) - \cancel{\sin(\ln(x))} + \cancel{\sin(\ln(x))} + \cos(\ln(x)) = 0$$

$$-2 \cos(\ln(x)) + \cos(\ln(x)) + \cos(\ln(x)) = 0$$

$$-2 \cos(\ln(x)) + 2 \cos(\ln(x)) = 0$$

$$0 = 0$$

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2º EAO

Pregunta n°2

a) $y = 3^{\tan(x^3+x)} \quad / \cdot \ln$

$$\ln(y) = \tan(x^3+x) \cdot \ln(3)$$

$$\frac{y'}{y} = \sec^2(x^3+x)(3x^2+1) \cdot \ln(3)$$

$$y' = \sec^2(x^3+x)(3x^2+1) \cdot \ln(3) \cdot 3^{\tan(x^3+x)}$$

b) $y = \frac{(e^x - x)^{10} \cdot (8 + x^3)^2}{\sqrt{6 + \sqrt{x}}} \quad / \ln$

$$\ln(y) = \frac{10 \ln(e^x - x) \cdot 2 \ln(8 + x^3)}{\frac{1}{2} \ln(6 + \sqrt{x})}$$

$$\ln(y) = 10 \ln(e^x - x) + 22 \ln(8 + x^3) - \left(\frac{1}{2} \ln(6 + \sqrt{x}) \right)$$

$$\frac{y'}{y} = 10 \cdot \frac{1}{e^x - x} \cdot (e^x - 1) + 2 \cdot \frac{1}{8 + x^3} \cdot 3x^2 - \frac{1}{2} \cdot \frac{1}{6 + \sqrt{x}} \cdot \left(\frac{1}{2\sqrt{x}} \right)$$

$$y' = \left[\frac{10(e^x - 1)}{e^x - x} + \frac{6x^2}{8 + x^3} - \frac{1}{2(6\sqrt{x})(2\sqrt{x})} \right] \cdot \left[\frac{(e^x - x)^{10} (8 + x^3)^2}{\sqrt{6 + \sqrt{x}}} \right]$$

Resumendo variáveis 2º Edo

Problema nº 3

a) $y^2 = x^3 + (\sin(xy) - x \ln(y)) \cdot \frac{dy}{dx}$

$$2y \cdot y' = 3x^2 + \cos(xy)(y + xy') - (\ln(y) + x \cdot \frac{1}{y} \cdot y')$$

$$2y \cdot y' + \frac{x}{y} \cdot y' - \cos(xy)(xy') = 3x^2 - \ln(y) + \cos(xy) \cdot y$$

$$y' \left(2y + \frac{x}{y} - \cos(xy)(x) \right) = 3x^2 - \ln(y)$$

$$y' = \frac{(3x^2 - \ln(y))}{\left(2y + \frac{x}{y} - \cos(xy)(x) \right)}$$

b) $y + x \cdot \sqrt{1+2y} = x^2$

Determinar $y(1,0)$

$$y' + (1/\sqrt{1+2y}) + x \cdot \frac{1}{2\sqrt{1+2y}} \cdot 2y' = 2x$$

$$y' + \sqrt{1} + 1 \cdot \frac{1}{2\sqrt{1}} \cdot 2y' = 2$$

$$y' + 1 + \frac{1}{2} \cdot 2y' = 2$$

$$y' + y' = 2 - 1$$

$$2y' = 1$$

$$y' = \frac{1}{2}$$

Ruimonde vertikaal 2° Ew

Preguntas N° 4

a) $3x^2y + y^2 - 3x = 1$ pto A (1, -4)

$$(6xy + 3x^2 \cdot y') + (2y \cdot y') - 3 = 0$$

$$(6(1)(-4) + 3(1)^2 \cdot y') + (2 \cdot (-4) \cdot y') - 3 = 0$$

$$-24 + 3y' - 8y' - 3 = 0$$

$$-27 = 5y'$$

$$y' = -\frac{27}{5}$$

$$m = -\frac{27}{5}$$

$$L: y + 4 = -\frac{27}{5}(x - 1)$$

$$y = -\frac{27}{5}x + \frac{27}{5} - 4$$

$$L: y = -\frac{27}{5}x + \frac{7}{5}$$