PRÁCTICA CALIFICADA 3

Apellidos y Nombres : …………………………………………………………………………………………
Escuela : …………………………………………………………………………………………
Fecha : lunes 13, octubre, 2025.

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1. **(20 puntos)** Derive:

a) $f(x) = \dfrac{e^{3x^2}}{Arcsen(x^2)}$

SOLUCION:

$$f'(x) = \frac{6xe^{3x^2}.Arcsen(x^2) - e^{3x^2}.\left[\dfrac{2x}{\sqrt{1-x^4}}\right]}{\left(Arcsen(x^2)\right)}$$

$$f'(x) = \frac{2xe^{3x^2}\left(3.Arcsen(x^2) - \left[\dfrac{1}{\sqrt{1-x^4}}\right]\right)}{\left(Arcsen(x^2)\right)} = \frac{2xe^{3x^2}\left(\dfrac{3.\sqrt{1-x^4}.Arcsen(x^2) - 1}{\sqrt{1-x^4}}\right)}{\left(Arcsen(x^2)\right)}$$

$$f'(x) = \frac{2xe^{3x^2}\left(3.\sqrt{1-x^4}.Arcsen(x^2) - 1\right)}{\sqrt{1-x^4}\left(Arcsen(x^2)\right)}$$

b) $f(x) = \sqrt[3]{1 + \ln\left(3x^2 + 4\right)}$

SOLUCION:

$$f(x) = \left(1 + \ln\left(3x^2 + 4\right)\right)^{\frac{1}{3}}$$

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

$$f'(x) = \frac{2x}{\left(3x^2 + 4\right)\sqrt[3]{\left(1 + \ln\left(3x^2 + 4\right)\right)^2}}$$

c) $tag(x^2-4)+(3xy-5)^3-4xy^4=0$

Solución .-

$\bullet\ Y' = -\dfrac{2x\,\sec^2(x^2-4)+3(3xy-5)^2.3y-4y^4}{0+3(3xy-5)^2.3x-16xy^3}$

$Y' = -\dfrac{2x\,\sec^2(x^2-4)+9y(3xy-5)^2-4y^4}{9x(3xy-5)^2-16xy^3}$

d) $y=(sen^4 3x)(\cos^3 4x)$

Solución .-

$y' = \left[4\,Sen^3 3x.\,Cos3x.\,3\right]Cos^3 4x + Sen^4 3x\left[3\,Cos^2 4x.-Sen4x.4\right]$

$Y' = 12\,Sen^3 3x\,Cos^2 4x\left(Cos\,3x\,Cos\,4x - Sen\,3x\,Sen\,4x\right)$

$Y' = 12\,Sen^3 3x\,Cos^2 4x\left(Cos\,7x\right)$