Prueba Matemáticas.

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CURSO: 2°ECO

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P. 1]

a) $\{-4, 0, 4,\}$

b) $\{-3, 2, 10\}$

c) $\mathbb{R} - \{-4, -3, 0, 2, 4, 10\}$

P.2.

a) $\lim_{x \to \frac{3\pi}{4}} \left(\frac{1 + tg(x)}{sen(x) + cos(x)} \right) = \frac{0}{0}$ indet.

$\lim_{x \to \frac{3\pi}{4}} \left(\frac{1 + \frac{sen(x)}{cos(x)}}{sen(x) + cos(x)} \right)$

$\lim_{x \to \frac{3\pi}{4}} \frac{\cancel{cos(x) + sen(x)}}{cos(x)} \cdot \frac{1}{\cancel{(sen(x) + cos(x))}}$

$\lim_{x \to \frac{3\pi}{4}} \frac{1}{cos(x)} = \frac{1}{cos\left(\frac{3\pi}{4}\right)} = \frac{1}{-\frac{\sqrt{2}}{2}} = -\frac{2}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = -\frac{\cancel{2}\sqrt{2}}{\cancel{2}} = -\sqrt{2}$

Escaneado con CamScanner

b) $\lim_{x \to 0} \left(\frac{4x + sen(3x)}{x\, sec(x)} \right)$

$\lim_{x \to 0} \frac{4x + sen(3x)}{\left(x \cdot \frac{1}{cos(x)} \right)} \begin{matrix} :x \\ :x \end{matrix} = \frac{0}{0}$ indet.

$\lim_{x \to 0} \frac{\frac{4\cancel{x}}{\cancel{x}} + \frac{3\,sen(3x)}{3\cancel{x}} \to 1}{\frac{\cancel{x} \cdot 1/cos(x)}{\cancel{x}}} =$

$\lim_{x \to 0} \frac{4 + 3}{\frac{1}{cos(x)}} = \frac{7}{1/1} = 7$

c) $\lim_{x \to \infty} \left(\frac{x^2 - 9}{x(x^2+1)} \right) = \frac{\infty}{\infty}$ indet.

$\lim_{x \to \infty} \frac{x^2 - 9}{x^3 + x} \begin{matrix} :x^3 \\ :x^3 \end{matrix}$

$\lim_{x \to \infty} \frac{\cancel{\frac{1}{x}} \to 0 - \cancel{\frac{9}{x^3}} \to 0}{1 + \cancel{\frac{1}{x^2}} \to 0} = \frac{0}{1} = 0$

d)

P.3 dy/dx

a) $y = \ln(x) - \operatorname{sen}(x) + \frac{e^x}{4} - \ln(4)$

$y' = \frac{1}{x} - \cos(x) + \left(\frac{e^x \cdot 4 - e^x \cdot 0}{16}\right) - \cancel{\frac{01}{4}}$

$y' = \frac{1}{x} - \cos(x) + \frac{e^x}{4}$

b) $y = (x^4+x)\cdot(\sqrt{x} + \cos(x))$

$y' = (x^4+x)' \cdot (\sqrt{x} + \cos(x)) + (x^4+x)\cdot(\sqrt{x} + \cos(x))'$

$y' \left[(4x^3+1)(\sqrt{x}+\cos(x))\right] + \left[(x^4+x)\cdot\left(\frac{1}{2\sqrt{x}} - \operatorname{sen}(x)\cdot 1\right)\right]$

c)

c) $y = \frac{tg(x)}{e^x}$

$y' = \frac{(\sec^2(x)\cdot e^x) - (tg(x)\cdot e^x)}{(e^x)^2}$

P.4. $\frac{dy}{dx}$

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

$y' = \left[\left(\frac{1}{2\sqrt{x^2+\sqrt{\cos(x^3)}}}\right)\cdot(2x)\right] + \left(\left(\frac{1}{2\sqrt{\cos(x^3)}}\right)\cdot\left(-\operatorname{sen}(x^3)\cdot(3x^2)\right)\right)$

b) $y = (x+1)^4 \cdot \operatorname{sen}^3(2+\ln(x))$

$y' : ((x+1)^4)' \cdot (\operatorname{sen}^3(2+\ln(x)) + (x+1)^4 \cdot (\operatorname{sen}^3(2+\ln(x)))'$

$y' = (4(x+1)^3 \cdot 1)\cdot(\operatorname{sen}^3(2+\ln(x))) + (x+1)^4 \cdot (3\operatorname{sen}^2(2+\ln(x)) \cdot \cos(2+\ln(x)) \left(\cancel{0}+\frac{1}{x}\right)$

c) $y = \frac{e^{x^5}}{x^5+x^3}$

$y' = \frac{(e^{x^5})' \cdot (x^5+x^3) - (e^{x^5}) \cdot (x^5+x^3)'}{(x^5+x^3)^2}$

$y' = \frac{\left[(e^{x^5} \cdot 5x^4)(x^5+x^3)\right] - \left[(e^{x^5})\cdot(5x^4+3x^2)\right]}{(x^5+x^3)^2}$