Prueba Matemática

NOMBRE: Rodrigo Herrera
CURSO: 2° Eco
FECHA: 12 Agosto 2020

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

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

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

2 a) $\lim_{x \to \frac{3\pi}{4}} \left(\frac{1 + tg(x)}{sen(x) + cos(x)} \right) \frac{1 + tg(135°)}{sen(135) + cos(135)} = \frac{0}{0}$ IND.!!

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

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

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

$\lim_{x \to \frac{3\pi}{4}} \dfrac{1}{cos(x)}$ EVALUAMOS: $\dfrac{1}{\frac{-\sqrt{2}}{\sqrt{2}}} = \dfrac{-2}{\sqrt{2}}$

FIN PARTE

b) $\lim_{x \to 0} \left(\frac{4x + \text{SEN}(3x)}{x \cdot \text{SEC}(x)} \right)$ $\frac{0+0}{0+0} = \frac{0}{0}$ INDT //

$\overset{L'}{\lim_{x \to 0}} \left(\frac{4x + \text{SEN}(3x)}{x \cdot \frac{1}{\cos(x)}} \right) \overset{L'}{\lim_{x \to 0}} \frac{4x + \text{SEN}(3x)}{x \cdot \frac{1}{\cos(x)}}$ $: x$ $: x$

$\overset{L'}{\lim_{x \to 0}} \frac{\frac{4x}{x} + \frac{\text{SEN}(3x) \cdot 3}{x} \cdot 3}{\frac{x \cdot \frac{1}{\cos(x)}}{x}}$; $\overset{L'}{\lim_{x \to}} \frac{\frac{4x}{x} + \frac{3\text{SEN}(3x)}{3x}}{\frac{1}{\cos}}$ $\cdot 1$

$\overset{L'}{\lim_{x \to 0}} \frac{4+3}{\frac{1}{\cos(x)}}$

EVALUO :

$\Rightarrow \frac{7}{1} = \boxed{7}$ //

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

$\lim_{x\to\infty}\frac{x^2-9}{x^3-x} : \frac{x^3}{x^3} = \lim_{x\to\infty}\frac{\frac{x^2}{x^3}-\frac{9}{x^3}}{\frac{x^3}{x^3}-\frac{x}{x^3}}$

$\lim_{x\to\infty}\frac{\frac{x^2}{x^3}-\frac{9}{x^3}}{1-\frac{x}{x^3}}$

EVALUAMOS: $\frac{0}{1} = 0$

3.

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

$y' = \left(\frac{1}{x}\right) - (\cos(x)) + \left(\frac{(e^x \cdot 4) - (e^x \cdot 0)}{4^2}\right) - \left(\frac{1}{4}\right)$

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

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

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

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

4.

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

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

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

$$y' = \left[\left(4(x+1)^3 \cdot 1\right) \cdot \left[\operatorname{sen}^3(2+\ln(x))\right]\right] + \left[\left((x+1)^4\right) \cdot \left(3(\operatorname{sen}(2+\ln(x)))^2 \cdot \text{sigue}\right)\right]$$

$\Rightarrow$ $\cos(2+\ln(x)) \cdot \frac{1}{x}$

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

$$y' = \frac{e^{x^5} \cdot (5x^4) \cdot (x^5 + x^3) + e^{x^5} \cdot (5x^4 + 3x^2)}{(x^5 + x^3)^2}$$