Pregunta N°1

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

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

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

Pregunta N° 2

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

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

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

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

Escaneado con CamScanner

b) $\lim\limits_{x \to 0} \dfrac{4x + \operatorname{sen}(3x)}{x \cdot \sec(x)} = \dfrac{0}{0}$

$\lim\limits_{x \to 0} \dfrac{4x + \operatorname{sen}(3x)}{x \cdot \dfrac{1}{\cos(x)}}$

$\lim\limits_{x \to 0} \dfrac{4x + \operatorname{sen}(3x)}{\dfrac{x}{\cos(x)}}$ $1$

$\lim\limits_{x \to 0} 4\dfrac{x}{x} + 3\operatorname{sen}\dfrac{(3x)}{3x} = 4 + 3 = \boxed{7}$

c) $\lim\limits_{x \to \infty} \dfrac{x^2 - 9}{x(x^2+1)} = \dfrac{\infty}{\infty}$ indet

$\lim\limits_{x \to \infty} \dfrac{x^2 - 9 : x^3}{x^3 + x : x^3} = \dfrac{0}{1} = \boxed{0}$

Pregunta 3

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

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

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

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

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

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

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

4.-

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

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

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

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

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

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

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