A) Discontinua Reparable:

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

b) Discontinua irreparable:

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

c) Continua:

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

A) $\lim_{x \to \frac{3\pi}{4}} \left(\frac{1 + \tan(x)}{\operatorname{Sen}(x) + \operatorname{Cos}(x)} \right) = \frac{0}{0}$ ind

$$\lim_{x \to \frac{3\pi}{4}} \left(\frac{1 + \frac{\operatorname{Sen}(x)}{\operatorname{Cos}(x)}}{\operatorname{Sen}(x) + \operatorname{Cos}(x)} \right) \quad \lim_{x \to \frac{3\pi}{4}} \frac{\frac{\operatorname{Cos}(x) + \operatorname{Sen}(x)}{\operatorname{Cos}(x)}}{\frac{\operatorname{Sen}(x) + \operatorname{Cos}(x)}{1}}$$

$$\lim_{x \to \frac{3\pi}{4}} \frac{\cancel{(\operatorname{Cos}(x) + \operatorname{Sen}(x))}}{(\operatorname{Cos}(x))\cancel{(\operatorname{Sen}(x) + \operatorname{Cos}(x))}} \quad \lim_{x \to \frac{3\pi}{4}} \frac{1}{\operatorname{Cos}(x)} = \frac{1}{\frac{-\sqrt{2}}{2}} = \frac{-2}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} \quad \frac{-2\sqrt{2}}{2} = -\sqrt{2}$$

b) $\lim_{x \to 0} \left(\frac{4x + \operatorname{Sen}(3x)}{x \cdot \operatorname{Sec}(x)} \right) = \frac{0}{0}$ ind

$$\lim_{x \to 0} \left(\frac{4x + \operatorname{Sen}(3x)}{x \cdot \operatorname{Sec}(x)} \right) \quad \lim_{x \to 0} \frac{4x + \operatorname{Sen}(3x)}{x \cdot \frac{1}{\operatorname{Cos}(x)}} \quad \lim_{x \to 0} \frac{4x + \operatorname{Sen}(3x)}{\underbrace{\frac{x}{\operatorname{Cos}(x)}}_{1}}$$

$$\lim_{x \to 0} 4x + \operatorname{Sen}(3x) : x \quad \lim_{x \to 0} \frac{4\cancel{x}}{\cancel{x}} + 3\underbrace{\frac{\operatorname{Sen}(3x)}{3x}}_{1} = 4 + 3 = \boxed{7}$$

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

$$\lim_{x \to \infty} \left(\frac{x^2 - 9}{x(x^2+1)} \right) \quad \lim_{x \to \infty} \left(\frac{x^2 - 9}{x^3 + x} \right) \begin{matrix} : x^3 \\ : x^3 \end{matrix} \quad \lim_{x \to \infty} \left(\frac{\overset{0}{\cancel{1/x}} - \overset{0}{\cancel{9/x^3}}}{1 + \underset{0}{\cancel{1/x^2}}} \right) = \frac{0}{1} = 0$$

Escaneado con CamScanner

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

$$\frac{dy}{dx} = \frac{1}{x} - \cos(x) + \frac{((e^x \cdot 4) - (e^x \cdot 0))}{16}$$

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

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

$$\frac{dy}{dx} = (4x^3 + 1) \cdot (\sqrt{2} + \cos(x)) + (x^4 + x) \cdot \left(\frac{1}{2\sqrt{x}} - \operatorname{Sen}(x)\right)$$

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

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

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

$$\frac{dy}{dx} = \left(\frac{1}{2\sqrt{x^2+\sqrt{\cos(x^3)}}}\right) \cdot (2x) + \left(\frac{1}{2\sqrt{\cos(x^3)}}\right) \cdot \left(-\operatorname{Sen}(x^3)\right) \cdot (3x^2)$$

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

$$\frac{dy}{dx} = ((x+1)^4)' \cdot (\operatorname{Sen}^3(2+\ln(x)) + (x+1)^4 \cdot (\operatorname{Sen}^3(2+\ln(x)))'$$

$$(4(x+1)^3 \cdot 1) \cdot (\operatorname{Sen}^3(2+\ln(x)) + (x+1)^4 \cdot 3(\operatorname{Sen}(2+\ln(x)))^2 \cdot \rightarrow$$

$$\rightarrow \cdot \operatorname{Cos}(2+\ln(x)) \cdot \frac{1}{x}$$

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

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

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