Sebastian Jerez 2°E

Pregunta 1.

a) Discontinuidad Removible: $\{-4; 0; 4\}$

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

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

Sebastian Perez 7°C

Presentación N°2

a) $\lim_{x \to \frac{3\pi}{4}} \left(\frac{1 + tg(x)}{sen(x) + cos(x)} \right) = \frac{1+1}{\frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2}} = \frac{0}{0}$ ind

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

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

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

=

=

5) $\lim_{x \to 0} \frac{4x + \sin(3x)}{x \cdot \sec(x)} = \frac{0}{0}$ ind

$\lim_{x \to 0} = \frac{4x}{x} + \frac{3 \cdot \sin(3x)}{3x}$ $\quad \frac{(1+3)}{\frac{1}{\cos(x)}}$

$\lim_{x \to 0} \frac{7}{\frac{1}{\cos(x)}}$

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

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

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

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

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Pregunta 3

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

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

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

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

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

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

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

Sebastian Jara 2°E

Pregunta 4

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

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

más ordenado

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

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

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

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

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