Cincipolis, 24 de outubro de 2023.

Teste - limite

a) $\lim_{x \to 3} \frac{x-5}{x^3-7} \Rightarrow \frac{3-5}{3^3-7} = \frac{-2}{20} = \frac{-1}{10} = -0,1$

b) $\lim_{x \to -2} \sqrt{x^4 - 4x + 1} \Rightarrow \sqrt{(-2)^4 - 4(-2) + 1} \Rightarrow \sqrt{16 - (-8) + 1}\ \sqrt{25} = 5$

$y = 5$

c) $\lim_{x \to 1} \frac{x^2-1}{x-1} \Rightarrow \frac{(x+1)\cdot\cancel{(x-1)}}{\cancel{x-1}} = (x+1) = 1+1 = 2$

d) $\lim_{x \to 0} x^2 \left|sen \frac{1}{x}\right| \Rightarrow \lim_{x \to 0} x^2 \times \lim_{x \to 0} \left|sen \frac{1}{x}\right|$

$\lim 0^2 = 0 \cdot \lim |0,1|$

$\lim = 0$

e) $2\pi = 360$ $= 45°$

$\frac{\pi}{4} = x$

$\pi = 180°$

$\frac{\pi}{2} = 90°$

$\frac{\pi}{4} = 45°$

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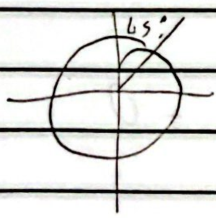

$\lim [4\,sen\,45° - 2\cos 45 + cotg\,45°$

$\lim [4\,sen\,45° - 2\cos 45 + \frac{1}{tg\,45}]$

$\lim \overset{2}{\cancel{4}}\cdot\frac{\sqrt{2}}{2} - 2\cdot\frac{\sqrt{2}}{2} + \frac{1}{1}$

$\lim 2\sqrt{2} - \sqrt{2} + 1 = \sqrt{2} + 1$

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f) $\lim_{t \to 2} \frac{t^2 - 5t + 6}{t - 2} \Rightarrow t^2$

$2^2 + (-2+(-3))2 + -2 \cdot 3 \Rightarrow \frac{(x + a) \cdot (x + b)}{} \frac{(\cancel{x} + (-2)) \cdot (\cancel{x} + (-3))}{\cancel{x} - 2} \Rightarrow \frac{\cancel{(x - 2)} \cdot (x - 3)}{\cancel{x - 2}}$

$4 + (-10) + 6 \Rightarrow 0 \cdot (-1)$

$2 - 3 = -1$

g) $\lim_{x \to 0} \frac{x^3}{x^2} = \frac{x \cdot \cancel{x} \cdot \cancel{x}}{\cancel{x} \cdot \cancel{x}} = 0^1 = 0$

h) $\lim_{x \to 0} \frac{2\cancel{x^2}}{\cancel{x^2}} = 2$

i) $\lim_{x \to \infty} \frac{2x - 5}{x + 8} =$

x é o mais valor elevado de x

j) $\lim_{x \to \infty} \frac{2x + 5}{x + 8} \Rightarrow \frac{\frac{2x}{x} - \frac{5}{x}}{\frac{x}{x} + \frac{8}{x}} \Rightarrow \frac{2 - \frac{5}{x} \to 0}{1 + \frac{8}{x} \to 0} = \frac{2}{1} = 2$

numero / x tende a 0.

k) $\lim_{x \to \infty} \frac{2x^3 - 3x + 5}{4x^5 - 2}$

$\frac{\frac{2x^3}{x^5} \to 0 - \frac{3x}{x^5} \to 0 + \frac{5}{x^5} \to 0}{\frac{4x^5}{x^5} - \frac{2}{x^5}} \Rightarrow \frac{\frac{2}{x^2} \to 0 - \frac{3}{x^4} \to 0 + \frac{5}{x^5} \to 0}{4 - \frac{2}{x^5} \to 0} = \frac{0}{4} = 0$

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2) a) $\lim_{x \to 0} (3 - 7x + 5x^2) = (3 - 7 \cdot 0 + 5 \cdot 0^2) = 3$

b) $\lim_{x \to -1} [(x+4)^3 \cdot (x+2)^{-1}] = [(-1+4)^3 \cdot (-1+2)^{-1}]$

$[(3)^3 \cdot (1)^{-1}]$

$27 \cdot \frac{1}{1} = 27$

c) $\lim_{x \to 2} \frac{4x - 1}{x + 2} \Rightarrow \frac{2^2 - 1}{x + 2} \Rightarrow \frac{8 - 1}{2 + 2} = \frac{7}{4}$

d) $\lim_{x \to -3} \frac{x^2 + 6x + 9}{x + 3} \Rightarrow (x + a) \cdot (x + b)$

$\frac{(x+3) \cdot \cancel{(x+3)}}{\cancel{x+3}} = x + 3 = -3 + 3 = 0$

e) $\lim_{x \to 3} \frac{\sqrt{x} - \sqrt{3}}{\boxed{x - 3}} \quad a - b = (\sqrt{x} + \sqrt{3}) \cdot (\sqrt{x} - \sqrt{3})$

$\boxed{a \mid b}$

$\lim \frac{\cancel{\sqrt{x} - \sqrt{3}}}{(\sqrt{x} + \sqrt{3}) \cdot \cancel{(\sqrt{x} - \sqrt{3})}} = \frac{1}{\sqrt{x} + \sqrt{3}} \Rightarrow \frac{1}{\sqrt{3} + \sqrt{3}} = \frac{1}{2\sqrt{3}}$

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