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Avaliação Parcial 1

Curso: Tecnologia em Telemática

Disciplina: Cálculo Diferencial e Integral

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2,5 01. Determine o valor do seguinte limite:

$$\lim_{x \rightarrow 2} \frac{\sqrt{3x^2 + 7x - 1} - 5}{x^3 - 5x^2 + 3x + 6} = -\frac{19}{50}$$

2,5 02. Determine o valor do seguinte limite:

$$\lim_{x \rightarrow -1} \frac{x^2 + 7x + 6}{\sqrt[3]{5x + 13} - 2} = 12$$

2,5 03. Determine o valor do seguinte limite:

$$\lim_{x \rightarrow -\infty} \left(\frac{5x - 22}{5x + 6} \right)^{\frac{-10x}{7}} = e^8$$

2,5 04. Calcule o valor do seguinte limite:

$$\lim_{x \rightarrow 0} \frac{\sec 4x - 1}{x^2} = 8$$

$$(x^2 - 3x - 3) \cdot (x - 2)$$

$$x^3 - 3x^2 - 3x - 2x^2 + 6x + 6$$

$$x^3 - 5x^2 + 3x + 6$$

$$(3x + 13)(x - 2)$$

$$3x^2 + 13x - 6x - 26$$

$$3x^2 + 7x - 26$$

ALUNO PABLO BUSATTO MATRÍCULA: 20221013020042

01. $\lim_{x \rightarrow 2} \frac{\sqrt{3x^2 + 7x - 1} - 5}{x^3 - 5x^2 + 3x + 6}$; $l(x) = \sqrt{3x^2 + 7x - 1} + 5$
 $l(2) = \sqrt{3 \cdot 4 + 14 - 1} + 5 = \sqrt{25} + 5 = 10$

$\lim_{x \rightarrow 2} \frac{3x^2 + 7x - 1 - 25}{(x^3 - 5x^2 + 3x + 6) \cdot l(x)}$

$\lim_{x \rightarrow 2} \frac{(x-2)(3x+13)}{(x-2)(x^2-3x-3) \cdot l(x)}$

$\lim_{x \rightarrow 2} \frac{3x+13}{(x^2-3x-3) \cdot l(x)}$

$\frac{3 \cdot 2 + 13}{(2^2 - 3 \cdot 2 - 3) \cdot l(2)}$

$\frac{19}{(4 - 6 - 3) \cdot 10}$

$\frac{19}{-50} = -\frac{19}{50}$

$\frac{3x^2 + 7x - 26}{-3x^2 + 6x} \cdot \frac{x-2}{3x+13}$

$\frac{13x - 26}{-13x + 26} \cdot \frac{x-2}{3x+13}$

$\frac{x^3 - 5x^2 + 3x + 6}{-x^3 + 2x^2} \cdot \frac{x-2}{x^2 - 3x - 3}$

$\frac{-3x^2 + 3x + 6}{3x^2 - 6x} \cdot \frac{-3x + 6}{3x - 6}$

$\frac{0}{0}$

02. $\lim_{x \rightarrow -1} \frac{x^2 + 7x + 6}{\sqrt[3]{5x+13} - 2}$; $l(x) = \sqrt[3]{(5x+13)^2} + 2 \cdot \sqrt[3]{5x+13} + 4$
 $l(-1) = \sqrt[3]{8^2} + 2 \cdot \sqrt[3]{8} + 4 = 12$

$\lim_{x \rightarrow -1} \frac{(x^2 + 7x + 6) \cdot l(x)}{\sqrt[3]{5x+13} - 8}$

$\lim_{x \rightarrow -1} \frac{(x^2 + 7x + 6) \cdot l(x)}{5x + 5}$

$\lim_{x \rightarrow -1} \frac{(x+1)(x+6) \cdot l(x)}{(x+1) \cdot 5}$

$\lim_{x \rightarrow -1} \frac{(x+6) \cdot l(x)}{5}$

$\frac{(-1+6) \cdot 12}{5} = \frac{5 \cdot 12}{5} = 12 //$

$\frac{x^2 + 7x + 6}{-x^2 - x} \cdot \frac{x+1}{x+6}$

$\frac{6x+6}{6x-6} \cdot \frac{x+1}{x+6}$

$\frac{0}{0}$

$$e^{\frac{k}{a}(b-c)} = e^{\frac{-10}{35}(-22-6)} = e^{\frac{-10}{35}(-28)} = e^{\frac{-10}{35} \cdot (-28)} = e^{\frac{280}{35}} = e^8$$

$$03. \lim_{x \rightarrow -\infty} \left(\frac{5x-22}{5x+6} \right)^{-\frac{10x}{7}}$$

$$\lim_{x \rightarrow -\infty} \left(\frac{5x-22}{5x+6} \right)^{-\frac{10x}{7}}$$

$$\lim_{x \rightarrow -\infty} \left[\frac{1 + \left(-\frac{22}{5} \right) \cdot \frac{1}{x}}{1 + \frac{6}{5} \cdot \frac{1}{x}} \right]^{-\frac{10}{7}}$$

$$, \text{ SENDO } \lim_{x \rightarrow -\infty} \left(1 + k \cdot \frac{1}{x} \right)^x = e^k :$$

$$\frac{\left(e^{-\frac{22}{5}} \right)^{-\frac{10}{7}}}{\left(e^{\frac{6}{5}} \right)^{-\frac{10}{7}}} = e^{\left(\frac{-22-6}{5} \right) \left(-\frac{10}{7} \right)} = e^{\frac{280}{7}} = e^{40} = e^8$$

$$04. \lim_{x \rightarrow 0} \frac{\sec(4x) - 1}{x^2}$$

$$\lim_{x \rightarrow 0} \frac{\frac{1}{\cos(4x)} - 1}{x^2}$$

$$\lim_{x \rightarrow 0} \frac{1 - \cos(4x)}{x^2 \cos(4x)}$$

$$\lim_{x \rightarrow 0} \frac{[1 - \cos(4x)][1 + \cos(4x)]}{x^2 \cos(4x) [1 + \cos(4x)]}$$

$$\lim_{x \rightarrow 0} \frac{\cancel{\sin(4x)} \cdot \cancel{\sin(4x)}}{x^2 \cos(4x) [1 + \cos(4x)]}$$

sumiu!!
⊕ Atenção!

$$\lim_{x \rightarrow 0} \frac{\sin(4x)}{x} \cdot \frac{\sin(4x)}{x} \cdot \frac{1}{1 + \cos(4x)}$$

$$; \text{ SENDO } \lim_{x \rightarrow 0} \frac{\sin(kx)}{x} = k$$

$$4 \cdot 4 \cdot \frac{1}{2}$$

$$8$$