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Cálculo I

26 de Maio de 2017

(1) Calcule o limite, se existir.

a)
$$\lim_{x \to 2} \frac{x^2 - x + 6}{x - 2}$$

b)
$$\lim_{x \to 2} \frac{x^2 + x - 6}{x - 2}$$

c)
$$\lim_{t \to -3} \frac{t^2 - 9}{2t^2 + 7t + 3}$$

d)
$$\lim_{h\to 0} \frac{(4+h)^2-16}{h}$$

e)
$$\lim_{h\to 0} \frac{\sqrt{1+h}-1}{h}$$

f)
$$\lim_{t \to 9} \frac{9-t}{3-\sqrt{t}}$$

g)
$$\lim_{t \to 0} \left(\frac{1}{t} - \frac{1}{t^2 + t} \right)$$

h)
$$\lim_{x\to 9} \frac{x^2 - 81}{\sqrt{x} - 3}$$

$$i) \lim_{x \to \infty} \frac{1}{2x+3}$$

j)
$$\lim_{t \to -\infty} \frac{t^2 + 2}{t^3 + t^2 - 1}$$

$$k) \lim_{x \to \infty} \frac{x+2}{\sqrt{9x^2+1}}$$

Gabarito

a)
$$\lim_{x \to 2} \frac{x^2 - x + 6}{x - 2} = \nexists$$

b)
$$\lim_{x \to 2} \frac{x^2 + x - 6}{x - 2} = 5$$

c)
$$\lim_{t \to -3} \frac{t^2 - 9}{2t^2 + 7t + 3} = \frac{6}{5}$$

d)
$$\lim_{h \to 0} \frac{(4+h)^2 - 16}{h} = 8$$

e)
$$\lim_{h \to 0} \frac{\sqrt{1+h}-1}{h} = \frac{1}{2}$$

f)
$$\lim_{t \to 9} \frac{9-t}{3-\sqrt{t}} = 6$$

g)
$$\lim_{t \to 0} \left(\frac{1}{t} - \frac{1}{t^2 + t} \right) = 1$$

h)
$$\lim_{x \to 9} \frac{x^2 - 81}{\sqrt{x} - 3} = 108$$

i)
$$\lim_{x \to \infty} \frac{1}{2x+3} = 0$$

$$\text{j) } \lim_{t \to -\infty} \frac{t^2 + 2}{t^3 + t^2 - 1} = 0$$

k)
$$\lim_{x \to \infty} \frac{x+2}{\sqrt{9x^2+1}} = \frac{1}{3}$$