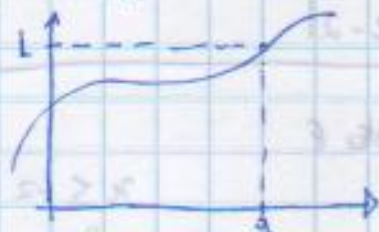


4/04/2023

DEFINIÇÃO intuitiva de limites

$$\lim_{x \rightarrow a} f(x) = L$$



Ex.: EXAME

$$\lim_{x \rightarrow 1} \frac{x-1}{x^2-1}$$

SE $x > 1$

$$x = 1,1, f(x) = 0,476190$$

$$x = 1,001, f(x) = 0,499975$$

SE $x < 1$

$$x = 0,9, f(x) = 0,666667$$

$$x = 0,999, f(x) = 0,500025$$

$$\text{Logo } \lim_{x \rightarrow 1} \frac{x-1}{x^2-1} = 0,5$$

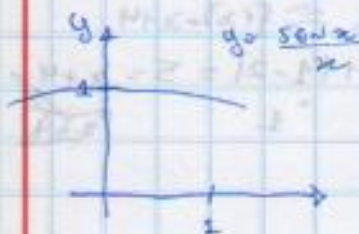
$$\text{Ex. 2: } \lim_{h \rightarrow 0} \frac{\sqrt{h^2+9} - 3}{h^2}$$

h	$\frac{\sqrt{h^2+9} - 3}{h^2}$
$\pm 4,0$	0,16227
$\pm 0,05$	0,166620
$\pm 0,01$	0,166666

→ VALORES DE APROXIMAÇÃO
MUITO BAIXOS SOFTWARE
CAUSAM ERROS.

$$\lim_{h \rightarrow 0} \frac{\sqrt{h^2+9} - 3}{h^2} = \frac{1}{6}$$

$$\text{Ex. 3: } \lim_{x \rightarrow 0} \frac{\sin x}{x} = 1$$



x	$\frac{\sin x}{x}$
$\pm 1,0$	0,84147098
$\pm 0,5$	0,95885108
$\pm 0,001$	0,99999983

$$\text{Ex. 4: } \lim_{x \rightarrow 0} \sin \frac{\pi}{x}$$

$$f(1) = \sin \pi = 0$$

$$f(3) = \sin 3\pi = 0$$

$$\lim_{x \rightarrow 0} \sin \frac{\pi}{x} = 0$$

$$\lim_{x \rightarrow 0} \sin \frac{\pi}{x} = \text{?}$$