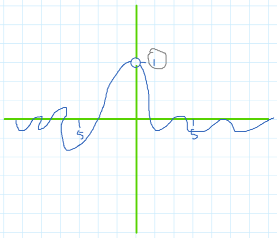
Limites

Limites Formales(introduccion)

martes, 13 de abril de 2021 00:01

$$\lim_{\theta \to 0} \frac{\operatorname{Sen} \theta}{\theta} = 1$$



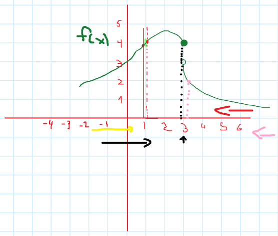
θ	$f(\theta)$
-0.004	0.9999
-0.003	0.9999
-0.002	0.9999
-0.001	0.9999
0	
0.001	0.9999
0.002	0.9999
0.003	0.9999
0.004	0.9999

$$\lim_{x \to 2} (x^2 - 3x + 1) = -1$$

$$\lim_{x \to 2} \frac{x^2 - 5x + 6}{x - 2} = x - 3 = -1$$

$$\lim_{x \to 3} \frac{x-3}{x^2-9} = \frac{\cancel{x-3}}{(x+3)\cancel{(x-3)}} = \frac{1}{x+3} = \frac{1}{6}$$

6



Para la funcion f(x) mostrada en la figura
Determine: 1) $\lim_{x \to 1} f(x) = 4$

2) $\lim_{x \to 3} f(x) = \nexists$

$$\lim_{x \to 1^-} f(x) = 4 = \lim_{x \to 1^+} f(x) = 4$$

$$\lim_{x \to 3^-} f(x) = 4 \neq \lim_{x \to 3^+} f(x) = 2$$

Épsilon-delta

$\text{EL} \lim_{x \to a} f$

Ej:

Demuestre un $\varepsilon > 0$, se

$|2x - 1 - 5| = |2$

$|x - 3| < \frac{\varepsilon}{2}$ ∴

ComP

$\varepsilon - \delta$

$f(x) = L$, si para todo $\varepsilon > 0$ existe un $\delta > 0$:

Si $0 < |x-a| < \delta$ entonces $|f(x) - L| < \varepsilon$

quiere encontrar un $\delta > 0$ tal que siempre $0 < |x-3| < \delta$

$|(2x-1)-5| < \varepsilon$

$|2x-6| = |2(x-3)| = |2||x-3| = 2|x-3| < \varepsilon$

$\delta = \frac{\varepsilon}{2}$ Para que $0 < |x-3| < \delta$

robacion:

$|x-3| < \frac{\varepsilon}{2}$

$2|x-3| < \varepsilon$

$|2(x-3)| < \varepsilon$

$|2x-6| < \varepsilon$

$|2x-1-5| < \varepsilon$

$|(2x-1)-5| < \varepsilon$

Tarea:

1) $\lim_{x \to -5} f(x)$

2) $\lim_{x \to -3} f(x)$

3) $\lim_{x \to 1} f(x)$

4) $\lim_{x \to 2} f(x)$

5) $\lim_{x \to 4} f(x)$