1. Completar la tabla para estimar el límite.

1.

$$\lim_{x\to 4} \frac{x-4}{x^2-3x-4}$$

x	3.9	3.99	3.999	4	4.001	4.01	4.1
$f(x)$	0.20408	0.20040	0.20004	0.2	0.19996	0.19960	0.19607

2.

$$\lim_{x\to 0} \frac{\sqrt{x+1}-1}{x}$$

x	-0.1	-0.001	-0.001	0	0.001	0.01	0.1
$f(x)$	0.5132	0.5013	0.5001	0.5	0.4999	0.4988	0.4881

3.

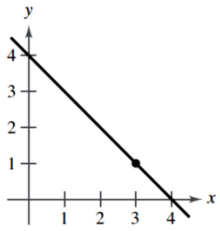
$$\lim_{x\to 0} \frac{x-3}{x^2-9}$$

x	2.9	2.99	2.999	3	3.001	3.01	3.1
$f(x)$	0.16949	0.16694	0.16669	0.166...	0.16664	0.16639	0.16393

2. Utilice la gráfica para encontrar el límite. Si el límite no existe, explique por qué.

1.

$$\lim_{x\to 3}(4-x)$$

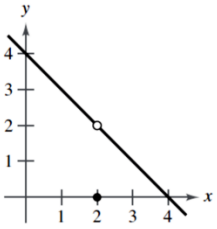


$$\exists \lim_{x\to 3}(x-4) = -1$$

2.

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

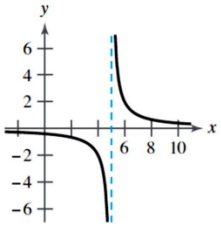
$$f(x) = \begin{cases} x-4, & x \neq 2 \\ 0, & x = 2 \end{cases}$$



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

3.

$$\lim_{x\to 5} \frac{2}{x-5}$$



$$\nexists \lim_{x\to 5} \frac{2}{x-5}$$

$\exists \lim_{x\to c} L \iff \lim_{x\to c^-} L = \lim_{x\to c^+} L$
Para este caso $\lim_{x\to 5} \frac{2}{x-5}$ no se comple.

3. Calcule el límite de la función.

$$\lim_{x\to 0}(2x-1) = -1$$

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

$$\lim_{x\to -3}(2x^2+4x+1) = 7$$

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

$$\lim_{x\to 7}\frac{3x}{\sqrt{x+2}} = 7$$

4. Escriba una función que simplifique la función dada y determine el límite de la función.

1.

$$\lim_{x\to 0} \frac{x^2+3x}{x}$$

$$\lim_{x\to 0} \frac{\cancel{x}(x+3)}{\cancel{x}}$$

$$\lim_{x\to 0}(x+3)$$

$$\lim_{x\to 0}((0)+3) = 3$$

$$\lim_{x\to 0} \frac{x^2+3x}{x} = 3$$

2.

$$\lim_{x\to -1} \frac{x^2-1}{x+1}$$

$$\lim_{x\to -1} \frac{\cancel{(x+1)}(x-1)}{\cancel{x+1}}$$

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

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

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

3.

$$\lim_{x\to 0} \frac{\sqrt{x+5}-\sqrt{5}}{x}$$

$$\lim_{x\to 0} (\frac{\sqrt{x+5}-\sqrt{5}}{x})(\frac{\sqrt{x+5}+\sqrt{5}}{\sqrt{x+5}+\sqrt{5}})$$

$$\lim_{x\to 0} \frac{(\sqrt{x+5})^2-(\sqrt{5})^2}{x(\sqrt{x+5}+\sqrt{5})}$$

$$\lim_{x\to 0} \frac{x+5-5}{x(\sqrt{x+5}+\sqrt{5})}$$

$$\lim_{x\to 0} \frac{\cancel{x}+\cancel{5}-\cancel{5}}{\cancel{x}(\sqrt{x+5}+\sqrt{5})}$$

$$\lim_{x\to 0} \frac{1}{\sqrt{x+5}+\sqrt{5}}$$

$$\lim_{x\to 0} \frac{1}{\sqrt{(0)+5}+\sqrt{5}} = \frac{1}{2\sqrt{5}}$$

$$\lim_{x\to 0} \frac{\sqrt{x+5}-\sqrt{5}}{x} = \frac{1}{2\sqrt{5}}$$