



Soluciones

1 Calcula los siguientes límites y representa la información que obtengas:

a) $\lim_{x \rightarrow +\infty} (7 + x - x^3)$ $\lim_{x \rightarrow -\infty} (7 + x - x^3)$

b) $\lim_{x \rightarrow +\infty} \frac{x^2 - 10x - 32}{5}$ $\lim_{x \rightarrow -\infty} \frac{x^2 - 10x - 32}{5}$

c) $\lim_{x \rightarrow +\infty} \left(-\frac{x^4}{3} + \frac{x}{2} - 17\right)$ $\lim_{x \rightarrow -\infty} \left(-\frac{x^4}{3} + \frac{x}{2} - 17\right)$

d) $\lim_{x \rightarrow +\infty} (7 - x)^2$ $\lim_{x \rightarrow -\infty} (7 - x)^2$

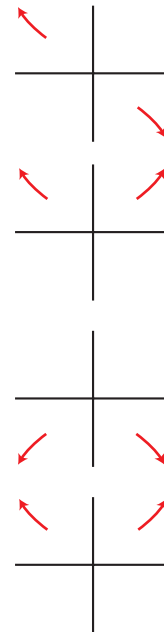
Resolución

a) $\lim_{x \rightarrow +\infty} (7 + x - x^3) = -\infty$; $\lim_{x \rightarrow -\infty} (7 + x - x^3) = +\infty$

b) $\lim_{x \rightarrow \pm\infty} \frac{x^2 - 10x - 32}{5} = +\infty$

c) $\lim_{x \rightarrow \pm\infty} \left(-\frac{x^4}{3} + \frac{x}{2} - 17\right) = -\infty$

d) $\lim_{x \rightarrow \pm\infty} (7 - x)^2 = +\infty$



2 Comprueba, dando valores grandes a x , que las siguientes funciones tienden a 0 cuando $x \rightarrow +\infty$.

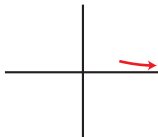
a) $f(x) = \frac{1}{x^2 - 10}$

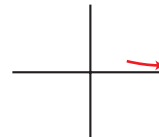
b) $f(x) = \frac{100}{3x^2}$

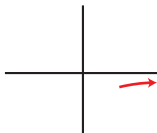
c) $f(x) = \frac{-7}{\sqrt{x}}$


d) $f(x) = \frac{2}{10x^2 - x^3}$

Resolución

a) $\lim_{x \rightarrow +\infty} f(x) = 0$ 

b) $\lim_{x \rightarrow +\infty} f(x) = 0$ 

c) $\lim_{x \rightarrow +\infty} f(x) = 0$ 

d) $\lim_{x \rightarrow +\infty} f(x) = 0$ 



Soluciones

3 Calcula el límite cuando $x \rightarrow +\infty$ y cuando $x \rightarrow -\infty$ de cada una de las siguientes funciones. Representa los resultados que obtengas:

a) $f(x) = x^3 - 10x$

b) $f(x) = \sqrt{x^2 - 4}$

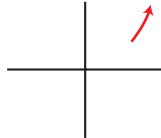
c) $f(x) = \frac{3-x}{2}$

d) $f(x) = \frac{x^2 - 2x}{-3}$

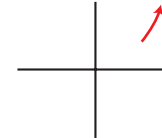
Resolución

Quando $x \rightarrow +\infty$:

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



b) $\lim_{x \rightarrow +\infty} f(x) = +\infty$



c) $\lim_{x \rightarrow +\infty} f(x) = -\infty$



d) $\lim_{x \rightarrow +\infty} f(x) = -\infty$

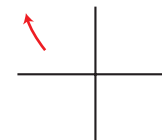


Quando $x \rightarrow -\infty$:

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



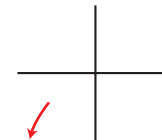
b) $\lim_{x \rightarrow -\infty} f(x) = +\infty$



c) $\lim_{x \rightarrow -\infty} f(x) = +\infty$



d) $\lim_{x \rightarrow -\infty} f(x) = -\infty$



4 Calcula los siguientes límites y representa las ramas que obtengas:

a) $\lim_{x \rightarrow +\infty} \frac{3}{(x-1)^2}$

$\lim_{x \rightarrow -\infty} \frac{3}{(x-1)^2}$

b) $\lim_{x \rightarrow +\infty} \frac{-2x^2}{3-x}$

$\lim_{x \rightarrow -\infty} \frac{-2x^2}{3-x}$

c) $\lim_{x \rightarrow +\infty} \frac{-1}{x^2-1}$

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

d) $\lim_{x \rightarrow +\infty} \frac{1}{(2-x)^3}$

$\lim_{x \rightarrow -\infty} \frac{1}{(2-x)^3}$

e) $\lim_{x \rightarrow +\infty} \frac{2x-1}{x+2}$

$\lim_{x \rightarrow -\infty} \frac{2x-1}{x+2}$

f) $\lim_{x \rightarrow +\infty} \frac{x^2+5}{1-x}$

$\lim_{x \rightarrow -\infty} \frac{x^2+5}{1-x}$

g) $\lim_{x \rightarrow +\infty} \frac{2-3x}{x+3}$

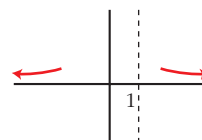
$\lim_{x \rightarrow -\infty} \frac{2-3x}{x+3}$

h) $\lim_{x \rightarrow +\infty} \frac{3-2x}{5-2x}$

$\lim_{x \rightarrow -\infty} \frac{3-2x}{5-2x}$

Resolución

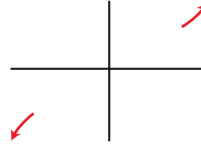
a) $\lim_{x \rightarrow +\infty} \frac{3}{(x-1)^2} = 0$; $\lim_{x \rightarrow -\infty} \frac{3}{(x-1)^2} = 0$



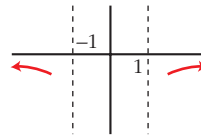


Soluciones

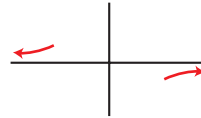
b) $\lim_{x \rightarrow +\infty} \frac{-2x^2}{3-x} = +\infty$; $\lim_{x \rightarrow -\infty} \frac{-2x^2}{3-x} = -\infty$



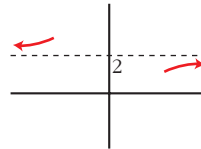
c) $\lim_{x \rightarrow +\infty} \frac{-1}{x^2-1} = 0$; $\lim_{x \rightarrow -\infty} \frac{-1}{x^2-1} = 0$



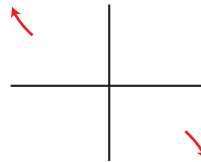
d) $\lim_{x \rightarrow +\infty} \frac{1}{(2-x)^3} = 0$; $\lim_{x \rightarrow -\infty} \frac{1}{(2-x)^3} = 0$



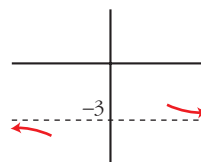
e) $\lim_{x \rightarrow +\infty} \frac{2x-1}{x+2} = 2$; $\lim_{x \rightarrow -\infty} \frac{2x-1}{x+2} = 2$



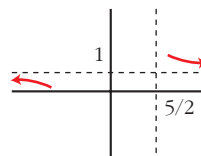
f) $\lim_{x \rightarrow +\infty} \frac{x^2+5}{1-x} = -\infty$; $\lim_{x \rightarrow -\infty} \frac{x^2+5}{1-x} = +\infty$



g) $\lim_{x \rightarrow +\infty} \frac{2-3x}{x+3} = -3$; $\lim_{x \rightarrow -\infty} \frac{2-3x}{x+3} = -3$



h) $\lim_{x \rightarrow +\infty} \frac{3-2x}{5-2x} = 1$; $\lim_{x \rightarrow -\infty} \frac{3-2x}{5-2x} = 1$



5 Resuelve los siguientes límites:

a) $\lim_{x \rightarrow +\infty} \frac{3x^2}{(x-1)^2}$

b) $\lim_{x \rightarrow -\infty} 1 - (x-2)^2$

c) $\lim_{x \rightarrow +\infty} \frac{1-x}{(2x+1)^2}$

d) $\lim_{x \rightarrow -\infty} \frac{x^3+1}{5x}$

Resolución

a) $\lim_{x \rightarrow +\infty} \frac{3x^2}{(x-1)^2} = 3$

b) $\lim_{x \rightarrow -\infty} 1 - (x-2)^2 = -\infty$

c) $\lim_{x \rightarrow +\infty} \frac{1-x}{(2x+1)^2} = 0$

d) $\lim_{x \rightarrow -\infty} \frac{x^3+1}{5x} = +\infty$



Soluciones

6 Calcula el límite cuando $x \rightarrow +\infty$ y cuando $x \rightarrow -\infty$ de las siguientes funciones y representa las ramas que obtengas:

a) $f(x) = \frac{-1}{x^2}$

b) $f(x) = 10x - x^3$

c) $f(x) = \frac{x^2}{x-1}$

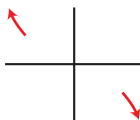
d) $f(x) = \frac{1-12x^2}{3x^2}$

Resolución

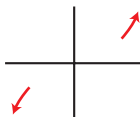
a) $\lim_{x \rightarrow +\infty} f(x) = 0; \quad \lim_{x \rightarrow -\infty} f(x) = 0$



b) $\lim_{x \rightarrow +\infty} f(x) = -\infty; \quad \lim_{x \rightarrow -\infty} f(x) = +\infty$



c) $\lim_{x \rightarrow +\infty} f(x) = +\infty; \quad \lim_{x \rightarrow -\infty} f(x) = -\infty$



d) $\lim_{x \rightarrow +\infty} f(x) = -4; \quad \lim_{x \rightarrow -\infty} f(x) = -4$

