

09/05/2025

## Funciones

$$y = mx + b$$

$$x \rightarrow z$$

$$y = Ax^2 + Bx + C$$

Notación

$$f(x) = mx + b$$

$$f(x) = 3x - 1 \quad \checkmark$$

$$g(x) = 3x - 1$$

$$f(2) = 3 \cdot 2 - 1 = 5$$

$$f(-7) = 3 \cdot (-7) - 1 = -22$$

See

$$f(x) = 3x^2 + 2x - 1$$

$$f(-1) = 3(-1)^2 + 2(-1) - 1 = 0$$

$$f(1) = 3(1)^2 + 2(1) - 1 = 4$$

funciones consideradas.

See  $h(x) = \frac{1}{x}$

$$h(2) = \frac{1}{2} \quad h(100) = \frac{1}{100} = 0.01$$

¿ $h(0)$ ? no existe

El dominio es  $\mathbb{R} - \{0\}$

$$h(x) = \frac{1}{x} \quad \text{para } x \neq 0$$

$$h(x) = \frac{1}{x} ; x \neq 0$$

c) ¿Cuál es el comportamiento de esta función

$$x \rightarrow \infty \quad h(10^6) = \frac{1}{10^6} = 0.000001$$

$$h(10^6) \quad h(10^{12}) = \frac{1}{10^{12}} = 0.000000000001 \approx 0$$

$$x \rightarrow +\infty \quad h(x) \rightarrow 0$$

$$x \rightarrow 0^+ \quad x = 0.001 \quad h(0.001) = \frac{1}{0.001} = 1000$$

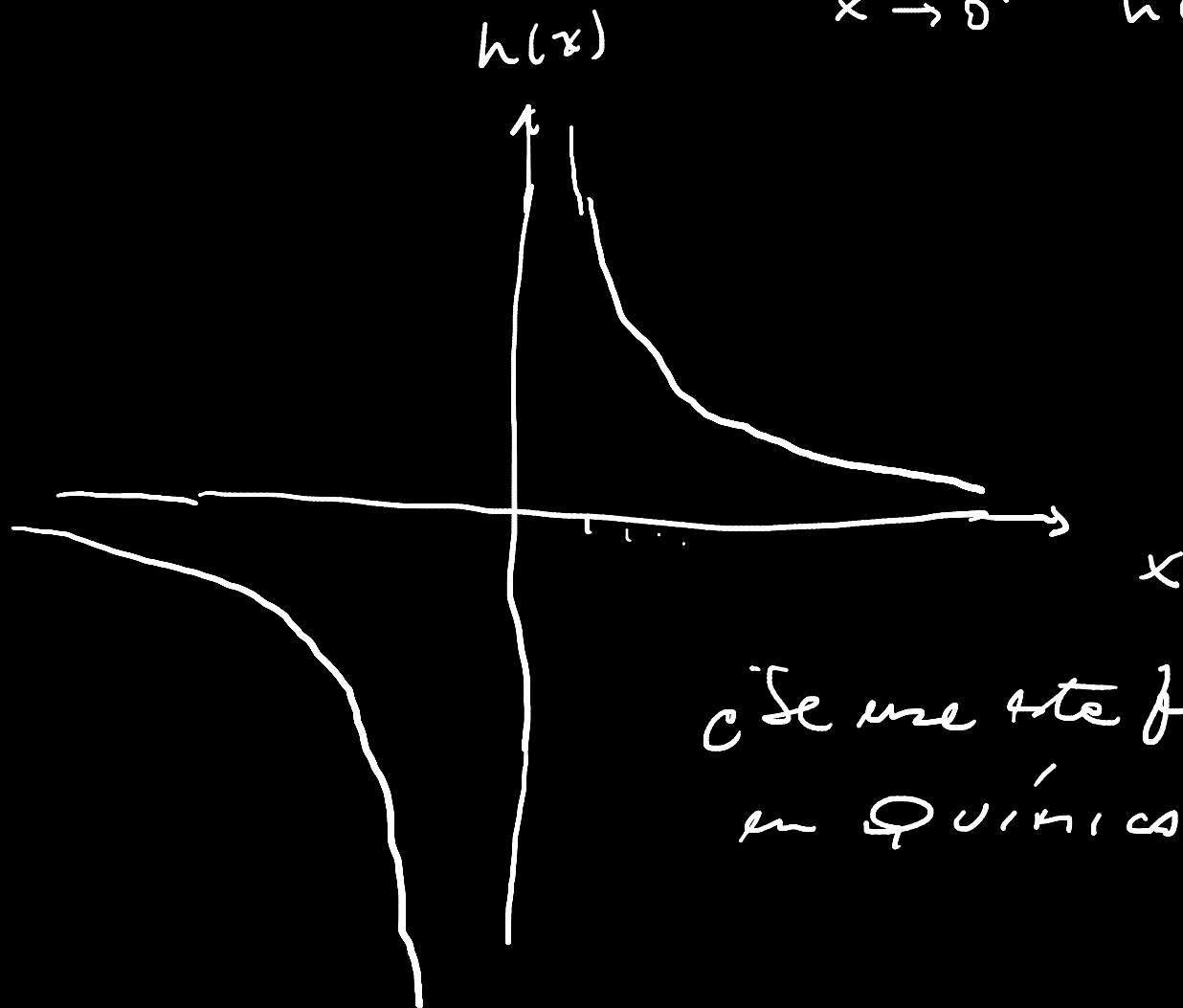
$$x = 0.000000001 = 10^{-9} \quad h(10^{-9}) = \frac{1}{10^{-9}} = 10^9$$

$$x \rightarrow 0^+ ; h(x) \rightarrow +\infty$$

$$h(x) = \frac{1}{x}$$

$$x \rightarrow +\infty \quad h(x) \rightarrow 0^+$$

$$x \rightarrow 0^+ \quad h(x) \Rightarrow +\infty$$



¿Se usa esta función  
en Química?

$$h(x) = \frac{1}{x}$$

$$x \rightarrow -\infty \quad h(-10^6) = \frac{1}{-10^6} = -10^{-6} \\ = -0.000001$$

$$h(-10^9) = \frac{1}{-10^9} = -\frac{1}{10^9} = -0.000000001$$

$$x \rightarrow -\infty ; h(x) \rightarrow 0^-$$

$$x \rightarrow 0^- ; h(-0.0001) = \frac{1}{-0.0001} = -10^4$$

$\underbrace{-0.0001}_{10^{-4}}$

$$x \rightarrow 0^- ; h(x) \rightarrow -\infty$$

Exemple de mzo.

$$PV = n \underline{RT}$$

$$PV = k \cdot T$$

supposons  $T = T_0$  & constante

$$P \cdot V = cte$$

$$V = \frac{cte}{\underline{P}}$$

Si  $P \nearrow$  alors  $V \searrow$

Sei  $f(x) = \frac{1}{x}$

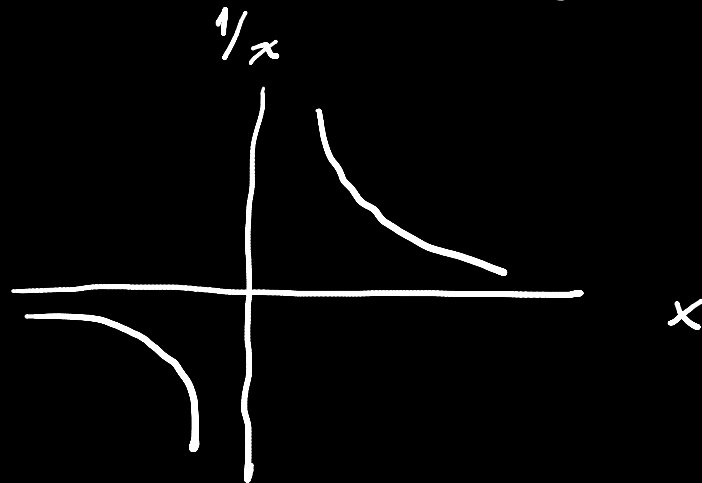
$$\lim_{x \rightarrow +\infty} \frac{1}{x} = 0$$

$$\lim_{x \rightarrow -\infty} \frac{1}{x} = 0$$



$$\lim_{x \rightarrow 0^+} \frac{1}{x} = \infty$$

$$\lim_{x \rightarrow 0^-} \frac{1}{x} = -\infty$$



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$f(x)$

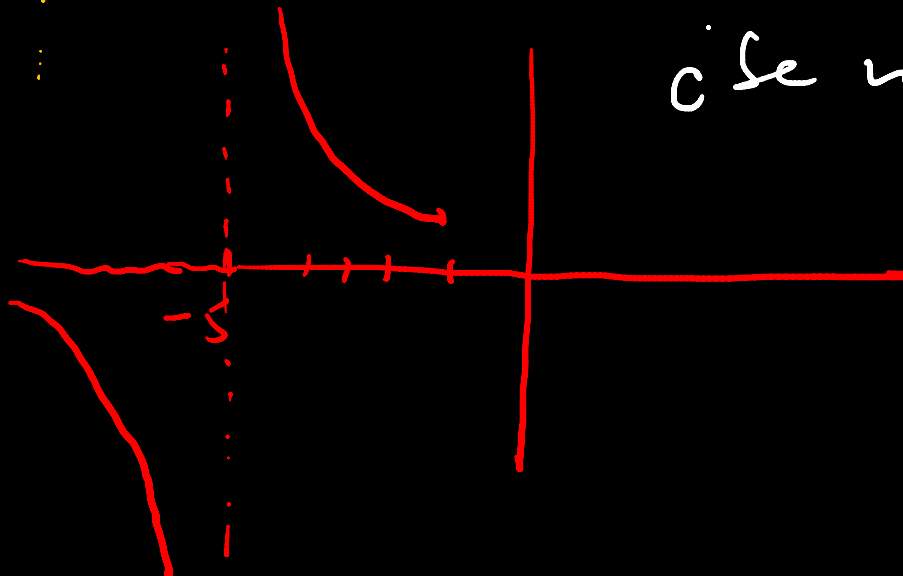
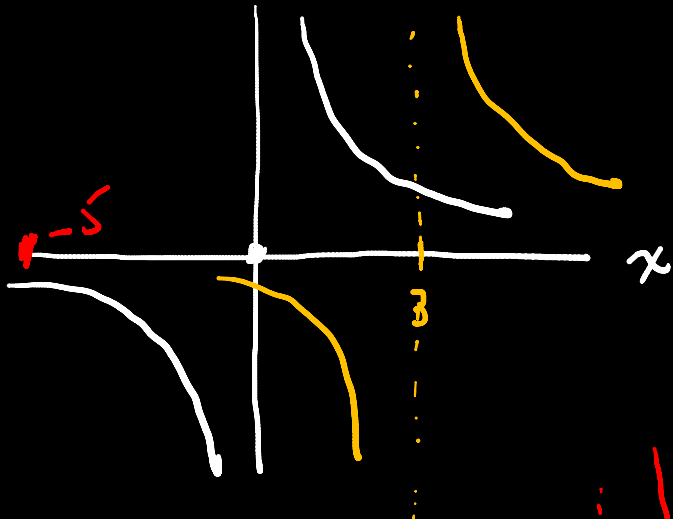
$$f(x) = \frac{1}{x}$$

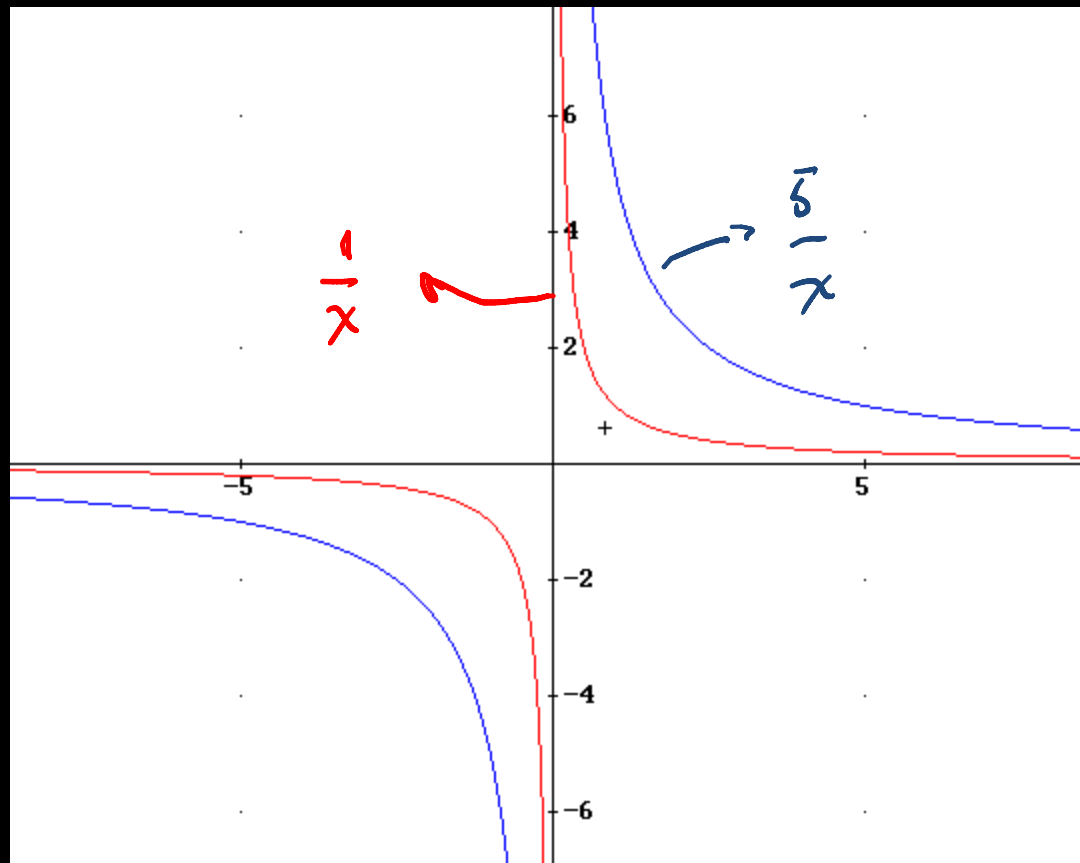
$$g(x) = \frac{1}{x-3}$$

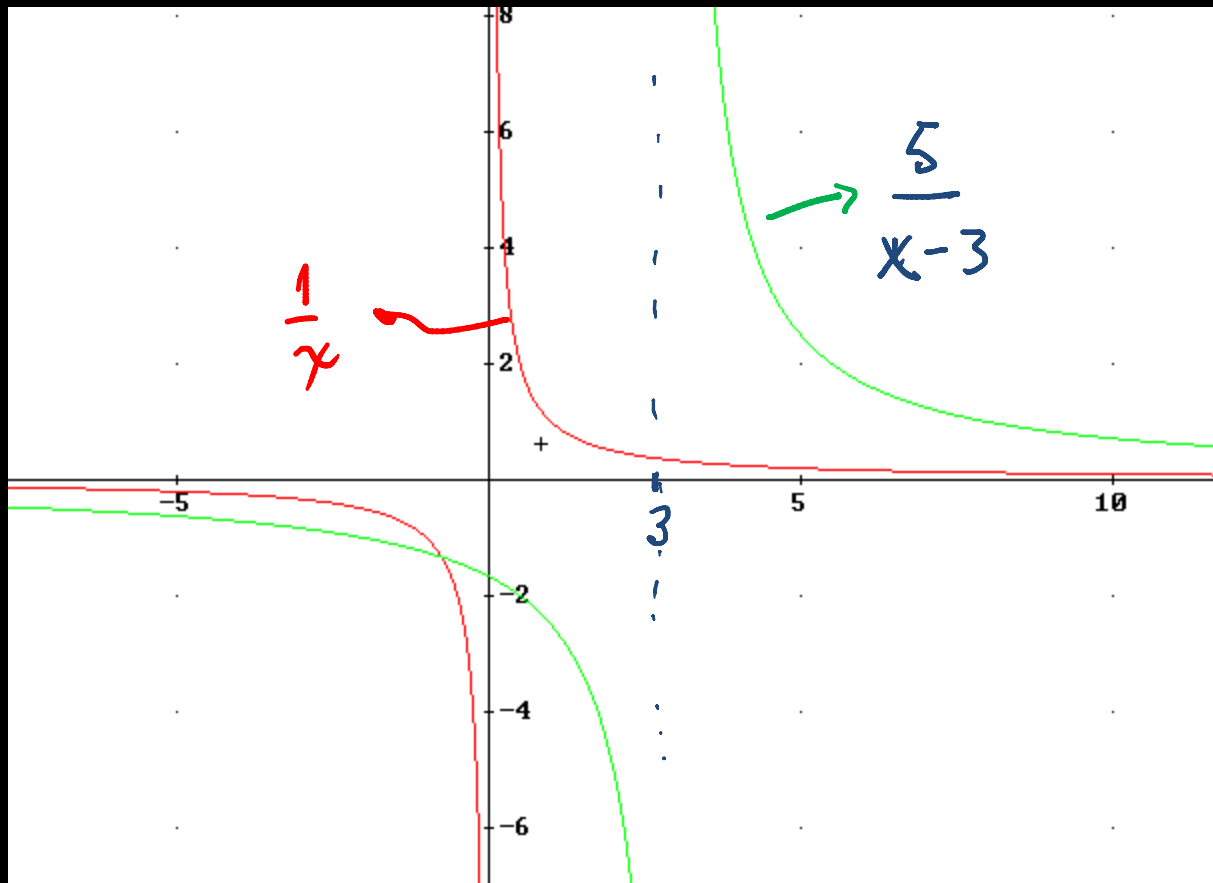
$$h(x) = \frac{1}{x+5}$$

else imagine

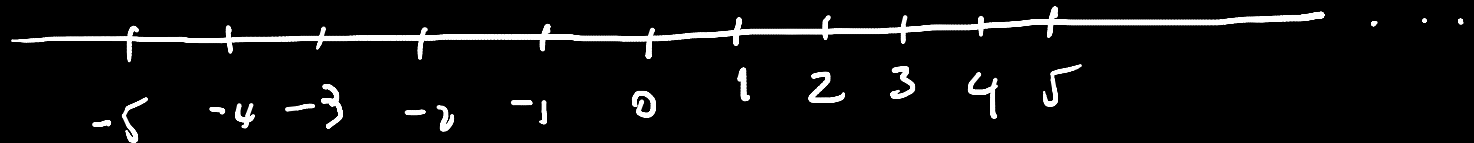
$$\frac{1}{x+5}?$$







Otra función  $f(x) = |x|$



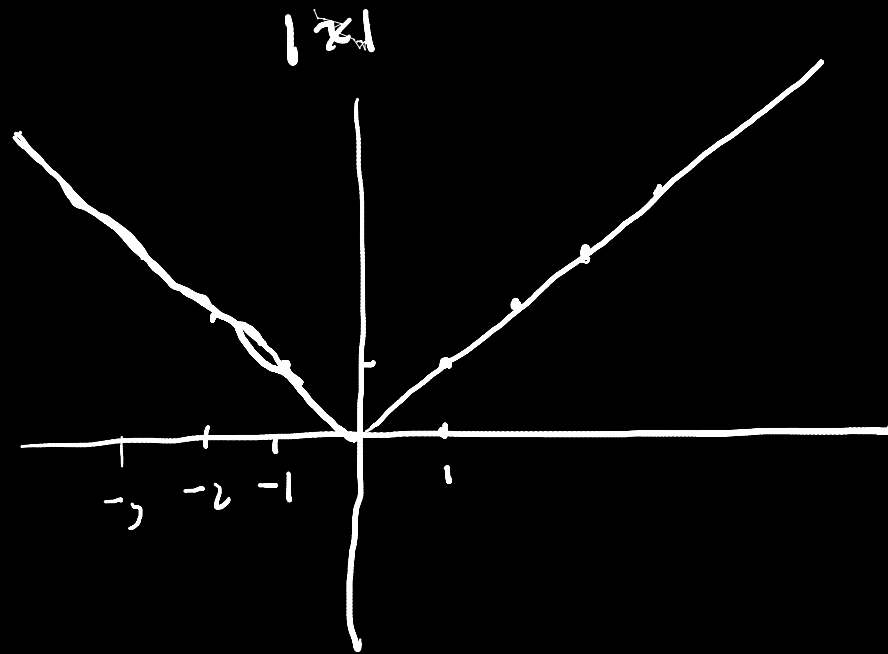
c) ¿Qué distancia existe entre el 2.7 y el cero? Resp. 2.7

$$|x|$$

$$|8| = 8 \quad ; \quad |-7.3| = 7.3$$

$|x|$  : Valor absoluto de  $x$ , y  
significa la distancia  
que existe entre  $x$  y el 0.

c) Quel est le graphique de  $|x|$  ?

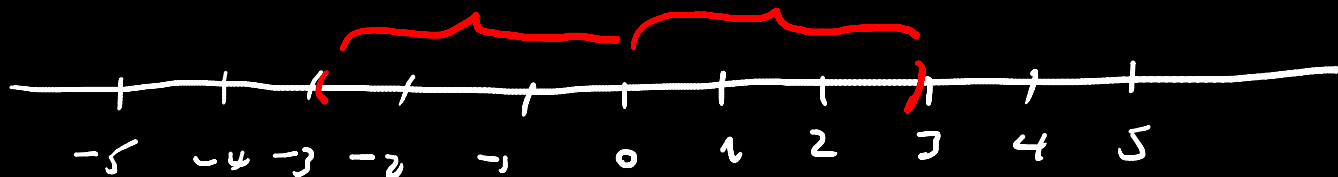


| $x$ | $ x $ |
|-----|-------|
| 3   | 3     |
| 2   | 2     |
| -3  | 3     |
| -2  | 2     |
| -1  | 1     |
| 1   | 1     |

$x$

Problema : Encontrar todos los números  
cuya distancia al cero sea menor que 3.

Solución



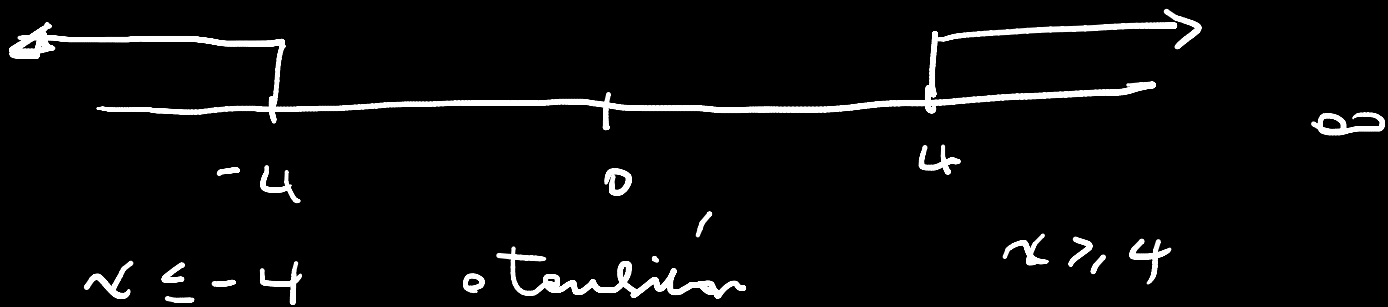
$$-3 < x < 3$$

$$(-3, 3) = \{ x \text{ reales tal que } -3 < x < 3 \}$$

$$|x| < 3$$

Problema: Encontrar los números cuya  
distancia al cero sea mayor o igual a 4.

$$|x| \geq 4$$



$$(-\infty, -4] \quad \text{también}$$

$$[4, \infty)$$

# APLICACIONES

$$|x| < a$$

Solución

$$-a < x < a$$

$$|x| < 7$$

Solución

$$-7 < x < 7$$

$$|x| < 2$$

Solución

$$-2 < x < 2$$

$$|m| < a$$

Solución

$$-a < m < a$$

Problema

$$|x-2| < 8$$

Significado

$$-8 < x-2 < 8$$

/ +2

$$-8+2 < x-2+2 < 8+2$$

$$\boxed{-6 < x < 10}$$