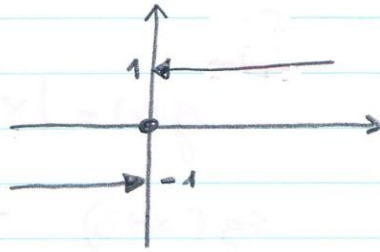


● Función Signo

$$\text{sg } x = \begin{cases} 1 & , x > 0 \\ 0 & , x = 0 \\ -1 & , x < 0 \end{cases}$$



$$\text{sg}(-8) = -1$$

$$\text{sg}(-0,0001) = -1$$

$$\text{sg}(10.000) = 1$$

$$\text{sg}(0,00001) = 1$$

● Fórmula:

$$|x| = \text{sg } x \cdot x$$

$$|u| = \text{sg } u \cdot u$$

$$x = 2$$

$$\frac{|2|}{2} = \frac{\text{sg } 2 \cdot 2}{2}$$

1 2

2

$$x = 0$$

$$\frac{|0|}{0} = \frac{\text{sg } 0 \cdot 0}{0}$$

0 0

0

$$x = -7$$

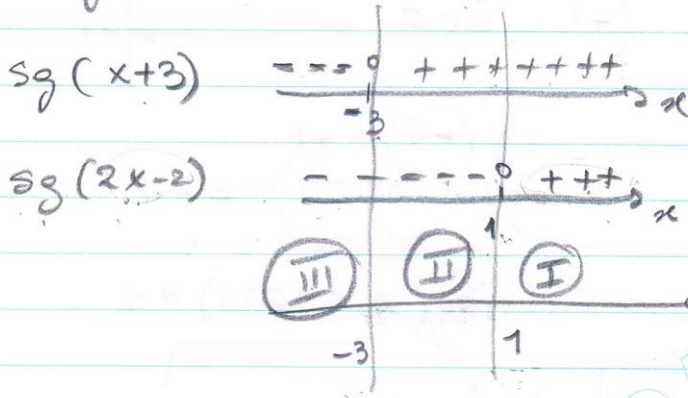
$$\frac{|-7|}{7} = \frac{\text{sg}(-7) \cdot (-7)}{7}$$

-1 (-7)

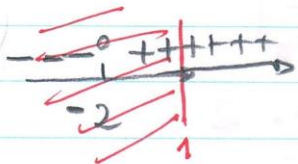
7

Ej:

$$g(x) = |x+3| - \text{sg}(2x-2)$$

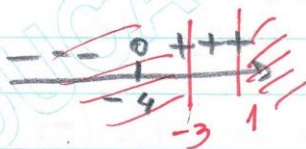


• $\textcircled{\text{I}}$ $(1, +\infty)$ $g(x) = x+3 - (1) = x+2$



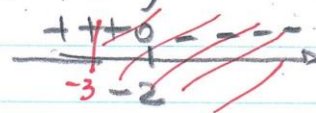
| x | y |
|---|---|
| 1 | 3 |
| 2 | 4 |

• $\textcircled{\text{II}}$ $(-3, 1)$ $g(x) = x+3 - (-1) = x+4$



| x | y |
|----|---|
| -3 | 1 |
| 1 | 5 |

• $\textcircled{\text{III}}$ $(-\infty, -3)$ $g(x) = -x-3 - (-1) = -x-2$

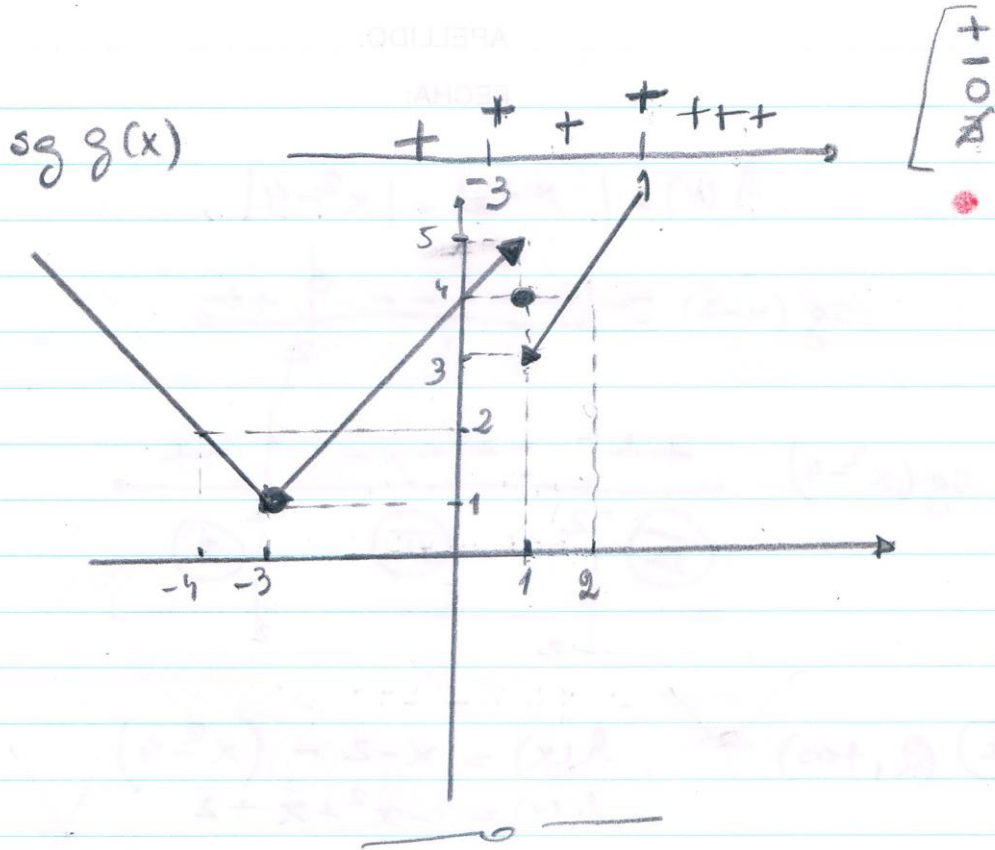


| x | y |
|----|---|
| -3 | 1 |
| -4 | 2 |

$$g(x) = \begin{cases} x+2, & x > 1 \\ 4, & x = 1 \\ x+4, & -3 < x < 1 \\ 1, & x = -3 \\ -x-2, & x < -3 \end{cases}$$

$$g(1) = |1+3| - \text{sg}(2 \cdot 1 - 2) = 4 - 0 = 4$$

$$g(-3) = |-3+3| - \text{sg}(2 \cdot (-3) - 2) = 0 - (-1) = 1$$



$$z^2 + 3z - 10 = 0$$

• j z = |x-1|

$$z = \frac{-3 \pm \sqrt{9 + 40}}{2} < \begin{matrix} 2 \\ -5 \end{matrix}$$

$$\therefore 1(z-2)(z+5)$$

$$f(x) = \underbrace{(|x-1|+2)}_{>0} \cdot \underbrace{(|x-1|+5)}_{>0} \quad \text{sg } f(x) = \text{sg}(|x-1|-2)$$

• i $z = \text{sg}(x-1)$ i(x) = \underbrace{(\text{sg}(x-1)-2)}_{<0} \cdot \underbrace{(\text{sg}(x-1)+5)}_{>0}

• k

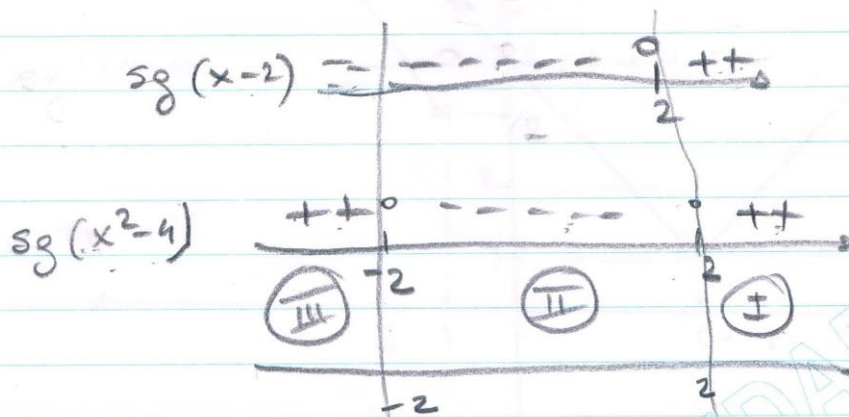
canonizat ogot

$$ax^m + bx^{m-1} + \dots < \begin{matrix} \alpha \\ \beta \end{matrix}$$

$$a(x-\alpha)(x-\beta)(x-\gamma) \dots$$

$$\text{sg } i(x) \xrightarrow{\text{---}}$$

• $h(x) = |x-2| - |x^2-4|$



Ⓘ $(2, +\infty)$ $h(x) = x-2 - (x^2-4)$
 $h(x) = -x^2 + x + 2$

Ⓙ $(-2, 2)$ $h(x) = -x+2 - (-x^2+4)$
 $h(x) = x^2 - x - 2$

Ⓚ $(-\infty, -2)$ $h(x) = -x+2 - (x^2-4)$
 $h(x) = -x^2 - x + 6$

$h(2) = |2-2| - |4-4| = 0$

$h(-2) = |-4| - |4-4| = 4$

para terminar

• graficar Parábolas

$$f(x) = ax^2 + bx + c$$

$$ax^2 + bx + c = 0$$

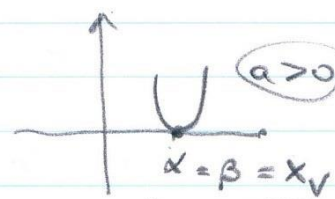
α
 β

$$V \left(\underbrace{-\frac{b}{2a}}_{x_v}, \underbrace{f\left(-\frac{b}{2a}\right)}_{y_v} \right)$$



$$ax^2 + bx + c = 0$$

α doble



$$ax^2 + bx + c = 0$$

$\alpha, \beta \notin \mathbb{R}$

$$V \left(-\frac{b}{2a}, f\left(-\frac{b}{2a}\right) \right)$$

