

Clase práctico – Rocha – 20 de marzo

Página 12

Determinar todos los  $x$  tales que:

1)  $|x| < 3$  → ejemplos: 2; 1; 1,5; 0; -1

8)  $x(x+1) \leq 0$

Verifican: 0; -1;  $-\frac{1}{2}$

No verifican: -2

$|x| < 3 \Leftrightarrow x \in (-3, 3)$

$-\frac{1}{2} \cdot (-\frac{1}{2} + 1) = -\frac{1}{4} < 0$

$-2(-2+1) = -2(-1) = 2 > 0$

8)  $f(x) = x^2 + x$

Raíces de  $f$ :

$x(x+1) = 0$

$\Leftrightarrow \begin{cases} x = 0 \\ x + 1 = 0 \\ x = -1 \end{cases}$

$x(x+1) \leq 0 \Leftrightarrow x \in [-1, 0]$

Otra forma de resolver  $x(x+1) \leq 0$

Considero  $f: f(x) = x \cdot (x+1)$

Sg  $f(x) = \frac{0 \pm \sqrt{1-0}}{-1-0} = \frac{0 \pm 1}{-1} = 0, -1$

Raíces: 0, -1

$S = [-1, 0]$

2) ¿Val es  $f(2x+1)$ ?

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

2)  $f(x) = \frac{1}{2x+1}$

$f(x) = \frac{1}{x}$   $f: \mathbb{R} - \{0\} \rightarrow \mathbb{R}$

$\text{Dom}(f) = \mathbb{R} - \{0\}$

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

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

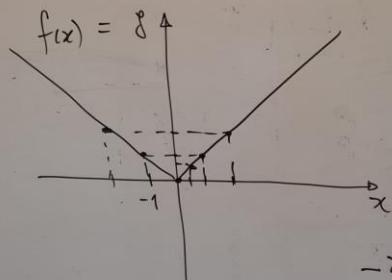
2	$\frac{1}{2}$	$\frac{1}{\frac{1}{2}} = 2$
$\frac{1}{5}$	5	$\frac{1}{5} = \frac{1}{5}$
$\frac{2}{3}$	$\frac{3}{2}$	

Si  $x = 3$  →  $f(2x+1) = f(2 \cdot 3 + 1) = f(7) = \frac{1}{7}$

$f \circ h(x) = f[h(x)]$

$h(x) = 2x+1$   $f(z) = \frac{1}{z}$   $\frac{1}{2x+1}$

$$x \in \mathbb{R} \quad |x| = \begin{cases} x, & \text{si } x \geq 0 \\ -x, & \text{si } x < 0 \end{cases}$$



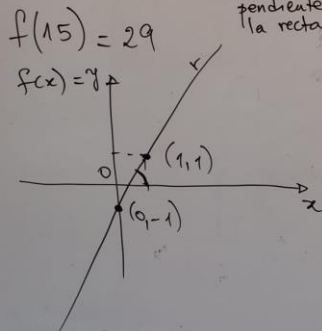
$$x = -1 \Rightarrow x < 0 \Rightarrow |-1| = -(-1) = 1$$

Funciones reales de variable real

$$f: \mathbb{R} \rightarrow \mathbb{R} / f(x) = 2x - 1$$

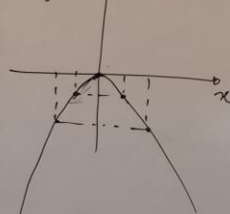
pendiente de la recta

x	y = f(x)	
0	-1	→ (0, -1)
1	1	→ (1, 1)



$$g: \mathbb{R} \rightarrow \mathbb{R} / g(x) = -x^2$$

$$g(x) = y$$



x	g(x)
-2	$-(-2)^2 = -4$
-1	$-(-1)^2 = -1$
0	0
1	$-(1)^2 = -1$
2	-4

Función valor absoluto

$$a \in \mathbb{R}, |a| = \sqrt{a^2} \quad f: \mathbb{R} \rightarrow \mathbb{R} / f(x) = |x| = \begin{cases} x & \text{si } x \geq 0 \\ -x & \text{si } x < 0 \end{cases}$$

$$|10| = \sqrt{10^2} = \sqrt{100} = 10$$

$$|-8| = \sqrt{(-8)^2} = \sqrt{64} = 8$$

(naturales)  $\mathbb{N} : 0, 1, 2, 3, \dots$

(enteros)  $\mathbb{Z} : a \in \mathbb{N}$  le agregamos  $-1, -2, -3, \dots$

(racionales)  $\mathbb{Q} : \frac{a}{b}, a \in \mathbb{Z}, b \in \mathbb{Z}, b \neq 0$

$$\frac{15}{1} = 15$$

$$0,75000\dots = 0,75 = \frac{3}{4} \in \mathbb{Q} \text{ y } \frac{3}{4} \notin \mathbb{N} \text{ y } \frac{3}{4} \notin \mathbb{Z}$$

$$\frac{2}{3} = 0,6666\dots = 0,\bar{6}$$

La expresión decimal:  $0,122333444455555\dots10101010101010\dots$

$$\sqrt{16} = 4 \text{ porque } 4^2 = 16$$

$$\sqrt{2} = a > 0 \text{ tal que } a^2 = 2$$

$$\sqrt{2} \approx 1,414213562\dots$$

representa un n° irracional