

# INECUACIONES

11 Si:  $x \in [2;5]$

¿A que Intervalo pertenece

$$\frac{2x+4}{x+4}$$

a)  $[-5; -2]$

Para  $x=2$

$$\frac{2(2)+4}{2+4} = \frac{8}{6} = \frac{4}{3}$$

b)  $[-\frac{4}{3}; -\frac{14}{9}]$

c)  $[2;5]$

o  $\frac{4}{3} \rightarrow$  Corrad

~~d)  $[\frac{4}{3}; \frac{14}{9}]$~~

Para  $x=5$

$$\frac{2(5)+4}{5+4} = \frac{14}{9}$$

e)  $[3;10]$

12 Si:

$$\frac{7}{5} \leq \frac{1}{2x-3} < \frac{8}{1}$$

$$\frac{1}{7} \geq 2x-3 > \frac{1}{8}$$

$$\frac{1}{7} + 3 \geq 2x - 3 + 3 > \frac{1}{8} + 3$$

$$\frac{22}{7} \geq 2x > \frac{25}{8}$$

$$\frac{11}{7} \geq x > \frac{25}{16}$$

$$\frac{25}{16} < x \leq \frac{11}{7}$$

13 La Solucion:

$$3x^2 - 8x + 11 \geq 4(x-1)$$

$$3x^2 - 8x + 11 \geq 4x - 4$$

$$3x^2 - 12x + 15 \geq 0$$

$$x^2 - 4x + 5 \geq 0$$

$$\Delta = b^2 - 4ac$$

$$(-4)^2 - 4(1)(5)$$

$$16 - 20$$

$$-4$$

$$x \leq 0$$

14 Mayor enteros

$$(x-4)(2-x)$$

$$(x-4)(x-2)$$

$$x-4=0 \quad x-2=0$$

$$x=4 \quad x=2$$

Puntos



$$S = (-\infty, -1] \cup [2, 4]$$

15

positiva

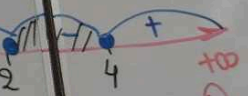
$$(x+1) \geq 0$$

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

$$x+1=0$$

$$x=-1$$

(R<sup>+</sup> + I(0))



$$S = (-\infty, -1] \cup [2, 4]$$

Dep to: 4

13 La Solución:

$$3x^2 - 8x + 11 \geq 4(x-1)$$

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$$x^2 - 4x + 5 \geq 0$$

$$\Delta = b^2 - 4ac$$

$$(-4)^2 - 4(1)(5)$$

$$16 - 20$$

$$\Delta < 0$$

$$CS = \mathbb{R}$$

14 Mayor entero

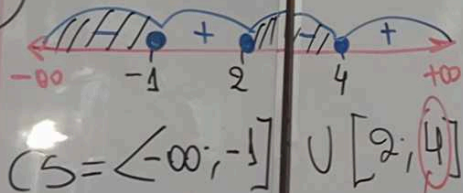
$$(x-4)(2-x)$$

$$(x-4)(x-2)$$

$$x-4=0 \quad x-2=0$$

$$x=4 \quad x=2$$

Puntos



$$CS = (-\infty, -1] \cup [2, 4]$$

Positive

$$(x+1) \geq 0$$

$$(x+1)$$

$$x+1=0$$

$$x=-1$$

(R<sup>+</sup> + I<sup>+</sup>)

Coord=0

Punt=0

OpTo: 4

15

$$3x^2 - 12x - 15 \leq 0$$

$$x^2 - 4x - 5 \leq 0$$

$$(x-5)(x+1)$$

$$x-5=0 \quad x+1=0$$

$$x=5 \quad x=-1$$

Coord=0

Punt=0

OpTo: 4

$$-x^2 + 4x - 3 \leq 0$$

$$x^2 - 4x + 3 \geq 0$$

$$(x-3)(x-1)$$

$$x-3=0 \quad x-1=0$$

$$x=3 \quad x=1$$

Coord=0

Punt=0

OpTo: 4



$$CS = [-1, 1] \cup [3, 5]$$

$$Conj Sol: [a, b] \cup [c, d]$$

Hallos:

$$E = 2a + b - 3c + d$$

$$2(-1) + 1 - 3(3) + 5$$

$$-2 + 1 - 9 + 5$$

$$-11 + 6$$

$$-5$$

$$a$$

$$-5$$

$$-5$$

$$-5$$

$$-5$$

$$-5$$

$$-5$$

$$-5$$

16

$$x^2 - 10x + 33 < 0$$

$$\Delta = b^2 - 4ac$$

$$(-10)^2 - 4(1)(33)$$

$$100 - 132$$

$$-32$$

$$\Delta < 0$$

$$+ < 0 (F)$$

$$CS = \emptyset$$

$$CS = \emptyset$$

$$CS = \emptyset$$

$$CS = \emptyset$$

$$CS = \emptyset$$

$$CS = \emptyset$$

$$CS = \emptyset$$

$$CS = \emptyset$$

$$CS = \emptyset$$



17) ResolVer:

$$\frac{2-x}{x} \leq +x$$

$$\frac{2-x}{x} - x \leq 0$$

$$\frac{+2-x-x^2}{x} \leq 0$$

$$\frac{x^2+x-2}{x} \geq 0$$

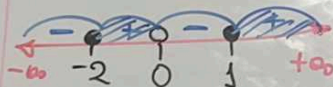
$$\frac{x^2+x-2}{x} \geq 0$$

$$(x+2)(x-1)$$

$x \neq 0$

$$x+2=0 \quad x-1=0$$

$$x=-2 \quad x=1$$



$$CS = [-2; 0) \cup [1; +\infty)$$

✓

18)

$$2 + \frac{1}{x-1} < \frac{1}{x+1}$$

$$\frac{2}{1} + \frac{1}{x-1} - \frac{1}{x+1} < 0$$

$$\frac{2(x^2-1) + x+1 - (x-1)}{(x-1)(x+1)} < 0$$

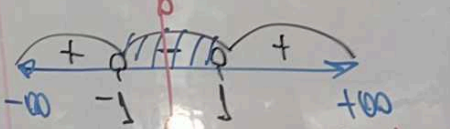
$$\frac{2x^2-2+x+1-x+1}{(x-1)(x+1)} < 0$$

$$\frac{2x^2}{(x-1)(x+1)} < 0$$

$$\frac{2}{(x+1)(x-1)} < 0$$

$$CS = (-1; 0) \cup (0; 1)$$

$$\frac{1}{(x+1)(x-1)} < 0$$



$$CS = (-1; 1)$$

$$(-1; 0) \cup (0; 1)$$

19)

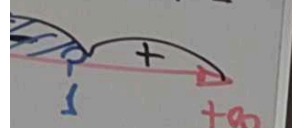
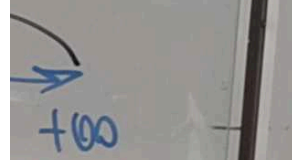
$$x^4$$

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

$$x+2=0$$

$$x=-2$$

$$CS$$

$\leq 0$   
 Absort Num  $\neq 0$   
 $-1 \quad x \neq 1$   
  
 $-1; 0 > 0$   
 $0; 1 >$   
 Al Final  
 $x \neq 0$   
  
 $+00$   
 $104$   
 $0; 1 >$

19

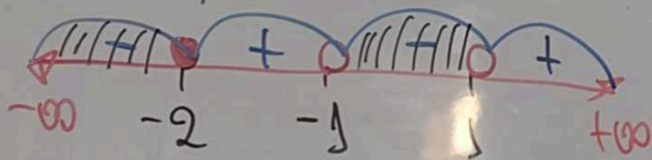
~~$(x^4+7)(x^6+1)(x+2)^7$   
 $(x^2-1)^{13}$~~
 $\leq 0$

$x^4+7=0 \rightarrow x^4=-7 \rightarrow x=\sqrt[4]{-7}$   
 $x^4=-7 \rightarrow x=\sqrt[4]{-7}$

$(x+2)^1$   
 $(x+1)(x-1)$

$x+2=0 \mid x \neq -1 \quad x \neq 1$   
 $x=-2$

cerd Num = 0  
 Pint  $\ominus$



$CS = \langle -\infty; -2 \rangle \cup \langle -1; 1 \rangle$

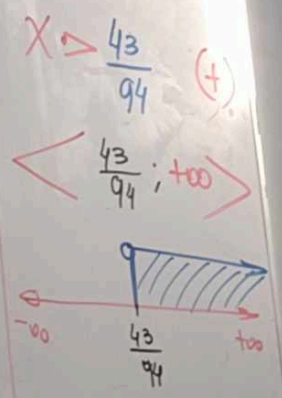
20

$\sqrt[3]{(0,00,32)} \quad (5x-2)$   
 $(0,2)^5 \quad \frac{5x-2}{3}$   
 $\frac{25x-10}{3}$   
 $(0,2)$

$0 < \text{base} < 1$

$\sqrt[2]{(0,2)} \quad \frac{2x+1}{2}$   
 $\frac{2x+1}{4}$   
 $(0,2)$   
 $(0,2)$

$\frac{25x-10}{3} > \frac{2x+1}{4}$   
 $4(25x-10) > 3(2x+1)$   
 $100x-40 > 6x+3$   
 $94x > 43$





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$$\text{Colog}_6 \text{ Antilog}_8 (\log_2^3 + 1)$$

$$\downarrow$$

$$(\log_2^3 + \log_2^2)$$

$$\text{Antilog}_8 (\log_2^6)$$

$$\log_2^6$$

$$\log_2^3$$

$$\log_2^3$$

$$\log_2^3$$

Anta: -3

$$\text{Colog}_6 (6^3)$$

$$-\log_6 6$$

29

$$\log_2(y) = 3$$

$$y = 8$$

$$\log_8 \left( \frac{x \cdot y^5}{2} \right) = 6$$

$$\frac{x^2 \cdot (8)^5}{2} = 8^6$$

$$x^2 = 16$$

$$x = \pm 4$$

$$x = 4$$

$$x = -4$$

Hallar:  $\frac{y}{|x|} \Rightarrow \frac{8}{|4|} = 2$

a

28 "x"

$$\log_x^2 = \log_2 + \log_2^2 + \log_2^3 + \dots$$

$$(\log_2)^1 + (\log_2)^2 + (\log_2)^3 + \dots$$

$$\times \log_2$$

a

$$\log_x^2 = \frac{\log_2}{1 - \log_2}$$

$$\frac{x^2 - 12x}{x} = \frac{1 - \log_2}{10}$$

$$x^2 - 12x = 1 - \log_2$$

$$x^2 - 12x = -9$$

$$x^2 - 12x = -3$$

$$x = 0$$

$$x = 35$$

$$x = 7$$

$$x = 5$$

b

$$\log_x^2 = \frac{\log_2^2}{\log_5}$$

$$\log_x^2 = \log_5^2$$

$$x = 5$$

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$$K = x^2$$

$$\log_3(2x^2)$$

$$3$$

$$2x^2$$

$$x^2 - 5$$

$$+ \log^3 2 + \dots$$

$$2)^2 + (\log 2)^3 + \dots$$

$$\log_x 2 = \frac{\log_{10} 2}{\log_{10} x}$$

$$\log_x 2 = \log_5 2$$

$$X = 5$$

(b)

27

$$K = X^2 - 5X + 4$$

$$\log_3(2X^2 - 1) + \log_5(3X - X^2) = \log_2(X^2 + 5)$$

$$2X^2 - 1 + 3X - X^2 = X^2 + 5$$

$$3X = 6$$

$$X^2 - 5X + 4 = 0 \quad X = 2$$

Sum Prod

$$K = 2^2 - 5(2) + 4 = -2$$

26

"X"

$$\log_2(X^2 - 5X + 1) - \log_3 X^2 + \ln_e(6X + 7) = 2X + 10$$

$$X^2 - 5X + 1 - X^2 + 6X + 7 = 2X + 10$$

$$X + 8 = 2X + 10$$

$$-2 = X$$

