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03 09 21

Ejercicio de Intervalos y Graficación

Desigualdad	Grafica	Intervalo
$x > 5$		$(5, \infty)$
$x < -3$		$(-\infty, -3)$
$x \leq 1$		$(-\infty, 1]$
$x \geq 3$		$[3, \infty)$
$x < 4$		$(-\infty, 4)$
$x \leq -1$		$(-\infty, -1]$
$x \geq 0$		$[0, \infty)$
$x > 6$		$(6, \infty)$
$x < -4$		$(-\infty, -4)$
$x \leq \frac{1}{2}$		$(-\infty, \frac{1}{2}]$
$x \geq -\frac{1}{3}$		$[-\frac{1}{3}, \infty)$
$x > -5$		$(-5, \infty)$

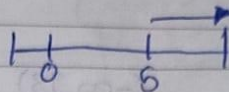
$$4x + 16 > 36$$

$$4x > 36 - 16$$

$$4x > 20$$

$$x > \frac{20}{4}$$

$$x > 5$$



$(5, \infty)$

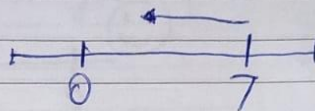
$$2x + 14 < 28$$

$$2x < 28 - 14$$

$$2x < 14$$

$$x < 14/2$$

$$x < 7$$



$(-\infty, 7)$

$$5x + 35 < 80$$

$$5x < 80 - 35$$

$$5x < 45$$

$$x < \frac{45}{5}$$

$$x < 9$$



$(-\infty, 9)$

$$\frac{2x + 6}{3} < 24$$

$$2x + 6 < 24(3)$$

$$2x + 6 < 72$$

$$2x < 72 - 6$$

$$2x < 66$$

$$x < \frac{66}{2}$$

$$x < 33$$

$$3(4x + 10) < 9$$

$$4x + 10 < \frac{9}{3}$$

$$4x + 10 < 3$$

$$4x < 3 - 10$$

$$4x < -7$$

$$x < \frac{-7}{4}$$

$$\frac{3x+9}{6} < 18$$

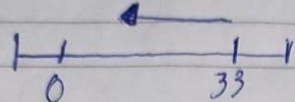
$$3x+9 < 108$$

$$3x < 108-9$$

$$3x < 99$$

$$x < \frac{99}{3}$$

$$x < 33$$



$(-\infty, 33)$

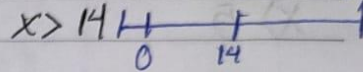
$$4x-36 > 20$$

$$4x > 56$$

$$x > \frac{56}{4}$$

$$x > 14$$

$(14, \infty)$



Desigualdades Cuadráticas

$$1. x^2 + 3x - 40 > 0$$

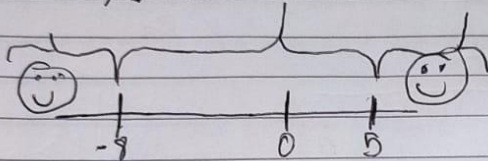
$$\begin{aligned} (-10)^2 + 3(-10) - 40 &> 0 \\ 100 + -30 - 40 &> 0 \\ 30 &> 0 \end{aligned}$$

$$(x+8)(x-5) > 0$$

Puntos críticos son:

$$x_1 = -8$$

$$x_2 = 5$$



$$(-\infty, -8) \cup (5, \infty)$$

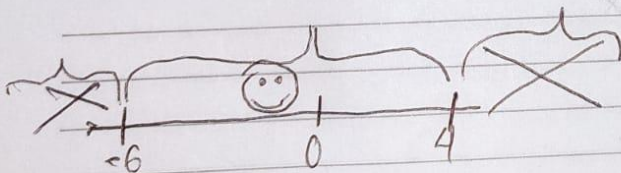
$$2. x^2 + 2x - 24 < 0$$

$$\begin{aligned} 0^2 + 2(0) - 24 &< 0 \\ -24 &< 0 \end{aligned}$$

Puntos críticos son:

$$x_1 = -6$$

$$x_2 = 4$$



$$(-6, 4)$$

Determina la solución de las siguientes inecuaciones cuadráticas:

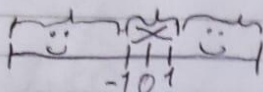
1. $x^2 - 1 \geq 0$

$x^2 \geq 1$

$\sqrt{x^2} \geq \sqrt{1}$

$x_1 = -1$

$x_2 = 1$



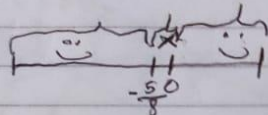
$(-\infty, -1) \cup (1, \infty)$

2. $8x^2 + 5x \geq 0$

$(8x+5)(x) \geq 0$

$x_1 = -\frac{5}{8}$

$x_2 = 0$



$(-\infty, -\frac{5}{8}) \cup (0, \infty)$

3. $x(x-3) - 2x(x-2) + 3x \leq 0$

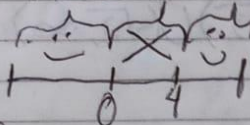
$x^2 - 3x - 2x^2 + 4x + 3x \leq 0$

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

$(-x)(x-4) \leq 0$

$x_1 = 0$

$x_2 = 4$



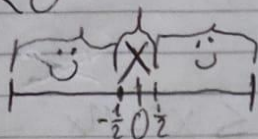
$(-\infty, 0) \cup (4, \infty)$

4. $4x^2 - 1 < 0$

$(2x+1)(2x-1) < 0$

$x_1 = -\frac{1}{2}$

$x_2 = \frac{1}{2}$



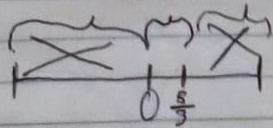
$(-\infty, -\frac{1}{2}) \cup (\frac{1}{2}, \infty)$

5. $3x^2 - 5x \leq 0$

$(3x-5)(x) \leq 0$

$x_1 = \frac{5}{3}$

$x_2 = 0$



$(0, \frac{5}{3})$

6. $x(x-5) - 2x(x+3+6) \leq x^2 - 11x$

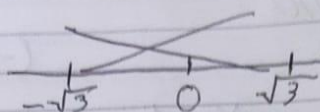
$x^2 - 5x - 2x^2 - 6x + 6 \leq x^2 - 11x$

$-2x^2 + 6 \leq 0$

$-2(x^2 - 3) \leq 0$

$x_1 = -\sqrt{3}$

$x_2 = \sqrt{3}$



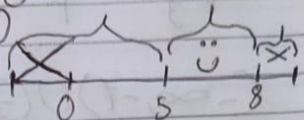
$(-\infty, -\sqrt{3}) \cup (\sqrt{3}, \infty)$

7. $x^2 - 13x + 40 \leq 0$

$(x-8)(x-5)$

$x_1 = 8$

$x_2 = 5$



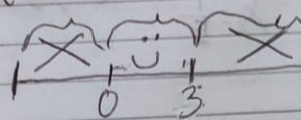
$(5, 8)$

8. $2x^2 + 3 \leq 7x$

$(x)(2x-7)$

$x_1 = 0$

$x_2 = 3$



$(0, 3)$

9. $2x^2 - 3x - 36 > x^2 + 2x$

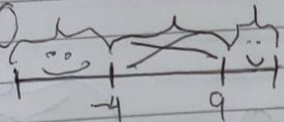
$2x^2 - 3x - x^2 - 2x > 0$

$x^2 - 5x - 36 > 0$

$(x+4)(x-9) > 0$

$x_1 = -4$

$x_2 = 9$



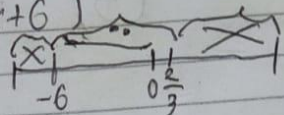
$(-\infty, -4) \cup (9, \infty)$

10. $(3x^2 + 16x - 12) < 0$

$(3x-2)(x+6)$

$x_1 = \frac{2}{3}$

$x_2 = -6$



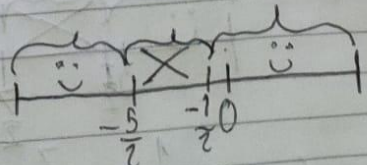
$(-6, \frac{2}{3})$

11. $4(x+3) \geq -5$

$4x^2 + 12x \geq -5$

$x_1 = -\frac{1}{2}$

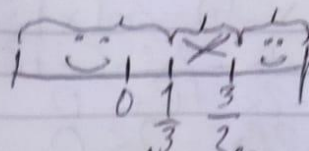
$x_2 = -\frac{5}{2}$



$(-\infty, -\frac{5}{2}) \cup (-\frac{1}{2}, \infty)$

12. $3(2x^2+1) > 11x$
 $6x^2+3 > 11x$
 $6x^2-11x+3 > 0$
 $(3x-1)(2x-3) > 0$

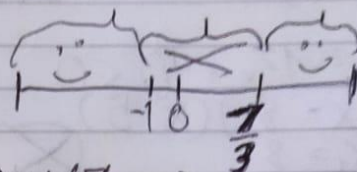
$x_1 = \frac{1}{3}$
 $x_2 = \frac{3}{2}$



$(-\infty, \frac{1}{3}) \cup (\frac{3}{2}, \infty)$

13. $x(3x-4) > 7$
 $3x^2-4x > 7$
 $3x^2-4x-7 > 0$
 $(x+1)(3x-7) > 0$

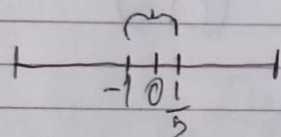
$x_1 = -1$
 $x_2 = \frac{7}{3}$



$(-\infty, -1) \cup (\frac{7}{3}, \infty)$

14. $5x^2+4x-1 \leq 0$
 $(x+1)(5x-1) \leq 0$

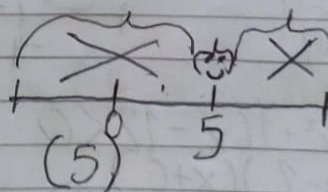
$x_1 = -1$
 $x_2 = \frac{1}{5}$
 $(-1, \frac{1}{5})$



15. $(x-2) \leq 2(x^2+2)$
 $x-2 \leq 2x^2+4$
 $x-6-2x^2 \leq 0$

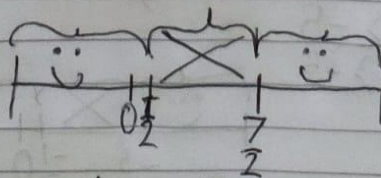
$(-\infty, 0) \cup (0, \infty)$

16. $x^2-10x+25 < 0$
 $(x-5)(x-5) < 0$
 $x_1 = 5$



17. $4x(x-4)+7 \geq 0$
 $4x^2-16x+7 \geq 0$
 $(2x-1)(2x-7) \geq 0$

$x_1 = \frac{1}{2}$
 $x_2 = \frac{7}{2}$



$(-\infty, \frac{1}{2}) \cup (\frac{7}{2}, \infty)$