

EJERCICIO 1

$$5) \quad 2 - \frac{x+3}{9} \geq \frac{2}{3} \cdot \left(3 - \frac{5x}{2}\right) - \frac{2(1-2x)}{3}$$

$$2 - \frac{x+3}{9} \geq 2 - \frac{5x}{3} - \frac{2-4x}{3}$$

$$\frac{36 - (2x+6)}{18} \geq \frac{36 - 30x - (12 - 24x)}{18}$$

$$36 - 2x - 6 \geq 36 - 30x - 12 + 24x$$

$$-2x + 30 \geq -6x + 24$$

$$-2x + 6x \geq 24 - 30$$

$$4x \geq -6$$

$$x \geq -\frac{6}{4} \rightarrow x \geq -\frac{3}{2} \rightarrow x \in \left[-\frac{3}{2}, +\infty\right)$$

$$7) \quad \underline{(2x-3)^2} - \underline{5x(x-1)} < \underline{3(x+1)} - \underline{(x-2)^2}$$

$$(4x^2 - 12x + 9) - (5x^2 - 5x) < 3x + 3 - (x^2 - 4x + 4)$$

$$4x^2 - 12x + 9 - 5x^2 + 5x < 3x + 3 - x^2 + 4x - 4$$

$$-x^2 - 7x + 9 < -x^2 + 7x - 1$$

$$-7x - 7x < -1 - 9$$

$$-14x < -10$$

$$\therefore (-14) \left\{ \begin{array}{l} x > \frac{-10}{-14} \rightarrow x > \frac{5}{7} \rightarrow x \in \left(\frac{5}{7}, +\infty\right) \end{array} \right.$$

$$9) \frac{(1+x)^2}{5} - \frac{2x-8}{25} < \frac{x^2}{5} + \frac{1}{5}$$

$$\frac{1+2x+x^2}{5} - \frac{2x-8}{25} < \frac{x^2}{5} + \frac{1}{5}$$

$$\frac{(5+10x+5x^2) - (2x-8)}{25} < \frac{5x^2+5}{25}$$

$$5+10x+5x^2 - 2x+8 < 5x^2+5$$

$$10x - 2x < 5 - 5 - 8$$

$$8x < -8$$

$$x < \frac{-8}{8} \rightarrow x < -1 \rightarrow x \in (-\infty, -1)$$

$$10) \frac{(2x-1)(2x+1)}{4} - \frac{3(4x^2+1)}{12} \leq -x$$

$$\frac{4x^2-1}{4} - \frac{12x^2+3}{12} \leq \frac{-x}{1}$$

$$\frac{(12x^2-3) - (12x^2+3)}{12} \leq \frac{-12x}{1}$$

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

$$-6 \leq -12x$$

$$\frac{-6}{-12} \geq x \rightarrow \frac{1}{2} \geq x \rightarrow x \leq \frac{1}{2} \rightarrow$$

$$\rightarrow x \in (-\infty, \frac{1}{2}]$$