

Escola Secundária de Tavira

Ano lectivo 2003/2004

10º ano

Resolução das inequações de 1º grau da ficha de exercícios

Abril 2004

$$i) \quad 3x - 7 \leq 2 + x - 9 \Leftrightarrow 3x - x \leq 2 - 9 + 7 \Leftrightarrow 2x \leq 0 \Leftrightarrow x \leq \frac{0}{2} \Leftrightarrow x \leq 0$$

$$C.S. =]-\infty, 0]$$

$$j) \quad 2x + 6 > 3x + 13 \Leftrightarrow 2x - 3x > 13 - 6 \Leftrightarrow -x > 7 \Leftrightarrow x < -7$$

$$C.S. =]-\infty, -7[$$

$$k) \quad 12 - 5x \leq 3 + (2x - 5) \Leftrightarrow 12 - 5x \leq 3 + 2x - 5 \Leftrightarrow -5x - 2x \leq 3 - 5 - 12 \Leftrightarrow \\ \Leftrightarrow -7x \leq -14 \Leftrightarrow 7x \geq 14 \Leftrightarrow x \geq \frac{14}{7} \Leftrightarrow x \geq 2$$

$$C.S. = [2, +\infty[$$

$$l) \quad \frac{2-3x}{5} < 2 + 2x - \frac{x+1}{10} \Leftrightarrow \frac{2-3x}{5} < \frac{2}{1} + \frac{2x}{1} - \frac{x+1}{10} \Leftrightarrow 4 - 6x < 20 + 20x - x - 1 \Leftrightarrow \\ \Leftrightarrow -6x - 20x + x < 20 - 1 - 4 \Leftrightarrow -25x < 15 \Leftrightarrow 25x > -15 \Leftrightarrow x > \frac{-15}{25} \Leftrightarrow x > -\frac{3}{5}$$

$$C.S. = \left] -\frac{3}{5}, +\infty \right[$$

$$m) \quad 2 + 3(x-1) \geq 6 - (2 - 2x + 1) \Leftrightarrow 2 + 3x - 3 \geq 6 - 2 + 2x - 1 \Leftrightarrow \\ \Leftrightarrow 3x - 2x \geq 6 - 2 - 1 - 2 + 3 \Leftrightarrow x \geq 4$$

$$C.S. = [4, +\infty[$$

$$n) \quad \frac{1+2(x-3+2x)}{3} + \frac{3-x}{2} < \frac{5x}{2} - 5 \Leftrightarrow \frac{1+2x-6+4x}{3} + \frac{3-x}{2} < \frac{5x}{2} - 5 \Leftrightarrow \\ \Leftrightarrow \frac{1+2x-6+4x}{3} + \frac{3-x}{2} < \frac{5x}{2} - \frac{5}{1} \Leftrightarrow 2+4x-12+8x+9-3x < 15x-30 \Leftrightarrow \\ \Leftrightarrow 4x+8x-3x-15x < -30-2+12-9 \Leftrightarrow -6x < -29 \Leftrightarrow 6x > 29 \Leftrightarrow x > \frac{29}{6}$$

$$C.S. = \left] \frac{29}{6}, +\infty \right[$$

$$o) 4x + 5 > 5x + 12 \Leftrightarrow 4x - 5x > 12 - 5 \Leftrightarrow -x > 7 \Leftrightarrow x < -7$$

$$C.S. =]-\infty, -7[$$

$$p) 3x - 5 \leq 3 + x - 8 \Leftrightarrow 3x - x \leq 3 - 8 + 5 \Leftrightarrow 2x \leq 0 \Leftrightarrow x \leq \frac{0}{2} \Leftrightarrow x \leq 0$$

$$C.S. =]-\infty, 0]$$

$$q) 1 + 3(x - 2) \geq 5 - (2 - 2x + 4) \Leftrightarrow 1 + 3x - 6 \geq 5 - 2 + 2x - 4 \\ \Leftrightarrow 3x - 2x \geq 5 - 2 - 4 - 1 + 6 \Leftrightarrow x \geq 4$$

$$C.S. = [4, +\infty[$$

$$r) 2x - \frac{x+1}{10} > \frac{2-3x}{5} - 2 \Leftrightarrow \frac{2x}{\underset{(\times 10)}{1}} - \frac{x+1}{\underset{(\times 1)}{10}} > \frac{2-3x}{\underset{(\times 2)}{5}} - \frac{2}{\underset{(\times 10)}{1}} \Leftrightarrow 20x - x - 1 > 4 - 6x - 20 \Leftrightarrow \\ \Leftrightarrow 20x - x + 6x > 4 - 20 + 1 \Leftrightarrow 25x > -15 \Leftrightarrow x > \frac{-15}{25} \Leftrightarrow x > -\frac{3}{5}$$

$$C.S. = \left] -\frac{3}{5}, +\infty \right[$$

$$s) 10 - 2x \leq 2 + (5x - 6) \Leftrightarrow 10 - 2x \leq 2 + 5x - 6 \Leftrightarrow -2x - 5x \leq 2 - 6 - 10 \Leftrightarrow \\ \Leftrightarrow -7x \leq -14 \Leftrightarrow 7x \geq 14 \Leftrightarrow x \geq \frac{14}{7} \Leftrightarrow x \geq 2$$

$$C.S. = [2, +\infty[$$

$$t) \frac{1 + 2(2x - 3 + x)}{3} + \frac{4 - 5x}{2} < \frac{x+1}{2} - 5 \Leftrightarrow \frac{1 + 4x - 6 + 2x}{3} + \frac{4 - 5x}{2} < \frac{x+1}{2} - 5 \Leftrightarrow \\ \Leftrightarrow \frac{1 + 4x - 6 + 2x}{\underset{(\times 2)}{3}} + \frac{4 - 5x}{\underset{(\times 3)}{2}} < \frac{x+1}{\underset{(\times 3)}{2}} - \frac{5}{\underset{(\times 6)}{1}} \Leftrightarrow 2 + 8x - 12 + 4x + 12 - 15x < 3x + 3 - 30 \Leftrightarrow \\ \Leftrightarrow 8x + 4x - 15x - 3x < 3 - 30 - 2 + 12 - 12 \Leftrightarrow -6x < -29 \Leftrightarrow 6x > 29 \Leftrightarrow x > \frac{29}{6}$$

$$C.S. = \left] \frac{29}{6}, +\infty \right[$$