



## EQUATIONS, INEQUALITIES AND SYSTEMS TEST

4° ESO



**Exercise 1: (3 ptos)** Work out:

$$\text{a) } \left. \begin{array}{l} 3(x+5) - 7(2x-1) \leq x+10 \\ x^2 - 1 > 0 \end{array} \right\} \rightarrow x \in (1, +\infty)$$

$$\text{b) } \left. \begin{array}{l} x^2 - 7x + 6 \leq 0 \\ 16 - x^2 > 0 \end{array} \right\} \rightarrow x \in [1, 4)$$

$$\text{c) } \left. \begin{array}{l} 2x - y \leq 0 \\ 3x + y > 10 \end{array} \right\}$$



**Exercise 2: (2.25 ptos)** Work out:

$$\text{a) } \left. \begin{array}{l} xy = 6 \\ 2x^2 - y^2 = -1 \end{array} \right\} \rightarrow \begin{array}{l} x = 2, \quad y = 3 \\ x = -2, \quad y = -3 \end{array} \quad (1.25)$$

$$\text{b) } \left. \begin{array}{l} x - 3y = 1 \\ x^2 - 5y^2 = 29 \end{array} \right\} \rightarrow \begin{array}{l} x = 7, \quad y = 2 \\ x = -19/2, \quad y = -7/2 \end{array} \quad (1)$$

**Exercise 3: (1 pto)** The perimeter of a rectangle has a length of 40 cm, while its area measures 51 cm<sup>2</sup>. Find its dimensions **The rectangle is 17 cm wide and 3 cm high or the other way round**

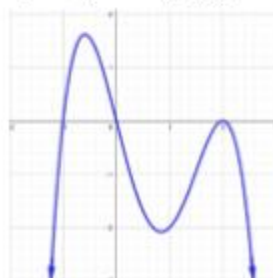
**Exercise 4: (3 ptos)** Work out:

$$\text{a) } \sqrt{7x+1} + 4 = 2x \rightarrow x = 5 \quad (0.75)$$

$$\text{b) } \sqrt{x+3} + \sqrt{5+2x} = 2 \rightarrow x = -2 \quad (1.25)$$

$$\text{c) } \frac{(x+3)^2}{(x+1)(x-1)} = \frac{8}{3} \rightarrow x = 5, \quad x = \frac{-7}{5} \quad (1)$$

**Exercise 5: (0.75 ptos)** Solve  $f(x) < 0$ , where  $f(x)$  is the function given by the graph:



$$x \in (-\infty, -1) \cup (0, 2) \cup (2, +\infty)$$

