



**EQUATIONS, INEQUALITIES AND
SYSTEMS TEST - 4º ESO**



Exercise 1: (1.75 points) Solve the following equations:

a) $x + \sqrt{4x+1} = 5 \rightarrow \boxed{x=2}$

b) $\sqrt{x-3} + \sqrt{x+5} = 4 \rightarrow \boxed{x=4}$

Exercise 2: (0.75 points) Find the points where $f(x) \geq 0$:



$$x \in (-\infty, 0] \cup [3, +\infty)$$

You can join the first two intervals

Exercise 3: (2.25 points) Solve the following non-linear simultaneous equations with two variables:

a)
$$\left. \begin{array}{l} xy = 20 \\ x^2 - 3y^2 = 88 \end{array} \right\} \rightarrow \boxed{\begin{array}{l} x=10, \quad y=2 \\ x=-10, \quad y=-2 \end{array}}$$

b)
$$\left. \begin{array}{l} 2x - y = 1 \\ 3x^2 - y^2 = 2 \end{array} \right\} \rightarrow \boxed{\begin{array}{l} x=1, \quad y=1 \\ x=3, \quad y=5 \end{array}}$$

Exercise 4: (2 points) Solve the following systems of inequalities:

a)
$$\left. \begin{array}{l} x^2 - 6x + 5 < 0 \\ x^2 - 36 \geq 0 \end{array} \right\} \rightarrow \text{No solution}$$

b)
$$\left. \begin{array}{l} 4 - x^2 > 0 \\ x^2 - 1 < 0 \end{array} \right\} \rightarrow x \in (-1, 1)$$

Exercise 5: (1 point) Find the dimensions of a rectangle if its perimeter has a length of 44 m and its area measures 105 m²

The dimensions of the rectangle are 15 m wide and 7 m long or the other way round

Exercise 6: (2.25 points)

a)
$$\frac{x+5}{x-2} - \frac{x-1}{x+2} - \frac{x^2-3x}{x^2-4} = \frac{-x^2+13x+8}{x^2-4}$$

b)
$$\frac{2x+1}{x-2} = \frac{x-1}{x+2} \rightarrow \boxed{x=0, \quad x=-8}$$

