

EQUATIONS, INEQUALITIES AND SYSTEMS TEST - 4° ESO

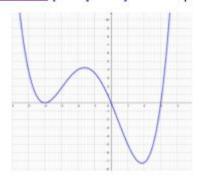


Exercise 1: (1.75 points) Solve the following equations:

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

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

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



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

You can join the first two intervals

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

a)
$$\begin{cases} xy = 20 \\ x^2 - 3y^2 = 88 \end{cases}$$
 \rightarrow $\begin{cases} x = 10, & y = 2 \\ x = -10, & y = -2 \end{cases}$
b) $\begin{cases} 2x - y = 1 \\ 3x^2 - y^2 = 2 \end{cases}$ \rightarrow $\begin{cases} x = 1, & y = 1 \\ x = 3, & y = 5 \end{cases}$

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$$\begin{cases} 2x - y = 1 \\ 3x^2 - y^2 = 2 \end{cases}$$
 \rightarrow $\begin{cases} x = 1, y = 1 \\ x = 3, y = 5 \end{cases}$

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

a)
$$\begin{cases} x^2 - 6x + 5 < 0 \\ x^2 - 36 \ge 0 \end{cases}$$
 \rightarrow $\not \equiv$ solution

b)
$$\frac{4-x^2>0}{x^2-1<0}$$
 $\rightarrow x \in (-1,1)$

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 $x=0, x=-8$

