

EQUATIONS, INEQUALITIES AND SYSTEMS TEST - 4^o ESO

Exercise 1: Solve the following equations:

a) (0.75 points) $x^4 - 14x^2 + 45 = 0$

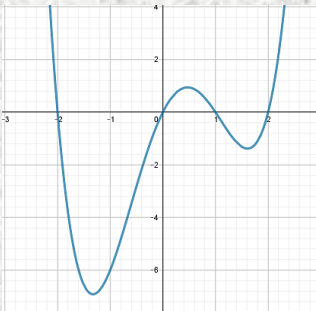
b) (0.75 points) $\sqrt{2-x} - x = 10$

c) (1 point) $\sqrt{3x+1} + \sqrt{x+3} = 4$

Exercise 2: (1.5 points) Solve these inequalities:

a) (1 point) $x^3 - x^2 - 12x \leq 0$

b) (0.5 points) $x^4 - x^3 - 4x^2 + 4x > 0$ if its graph is given by



Exercise 3: (2 points) Let's face now some non-linear simultaneous equations with two variables:

a)
$$\left. \begin{array}{l} x^2 - y^2 = 45 \\ 3x^2 + 2y^2 = 155 \end{array} \right\}$$

b)
$$\left. \begin{array}{l} xy = 30 \\ 4x^2 - y^2 = 64 \end{array} \right\}$$

Exercise 4: (3 points) And a few simultaneous inequalities :

a)
$$\left. \begin{array}{l} 3x - y < 7 \\ x - 2y \geq 4 \end{array} \right\}$$

b)
$$\left. \begin{array}{l} x^2 + 7x > 0 \\ 9 - x^2 \geq 0 \end{array} \right\}$$

c)
$$\left. \begin{array}{l} x^2 - 10x + 25 > 0 \\ x^2 - 3x + 2 \leq 2x + 8 \end{array} \right\}$$

Exercise 5: (1 point) Find the dimensions of a rectangle if its perimeter has a length of 60 m and its area measures 221 m²

