

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

Exercise 1: Solve the following equations:

a) (0.5 points) $x^4 - x^2 - 20 = 0$

b) (0.75 points) $\sqrt{1-3x} - 2x = 14$

c) (1 point) $\frac{7}{x+2} - \frac{3}{x-2} = \frac{8}{45}$

Exercise 2: Work out the solution of these simultaneous equations, using the indicated method in each case. Classify each system depending on the number of solutions you get:

a) (0.5 points) $\left. \begin{array}{l} x + 2y = 6 \\ 2x - y = 7 \end{array} \right\}$ Graphically

b) (0.5 points) $\left. \begin{array}{l} 3x - 5y = 4 \\ 2x - 3y = 2 \end{array} \right\}$ Elimination

c) (0.5 points) $\left. \begin{array}{l} x - 3y = 7 \\ 2x = 5 + 6y \end{array} \right\}$ Substitution

Exercise 3: (1.25 points) Find the solution of the inequalities:

a) $x^2 - 2x - 15 \leq 0$

b) $x^2 - 3x + 12 > 0$

c) $(x^2 - 2x - 8)(x + 2) > 0$

Exercise 4: (2 points) Let's face now some non-linear simultaneous equations with two variables:

a) $\left. \begin{array}{l} 2x + y = 1 \\ 3x^2 - y^2 = 2 \end{array} \right\}$

b) $\left. \begin{array}{l} xy = 6 \\ x^2 - y^2 = -5 \end{array} \right\}$

Exercise 5: (3 points) And finally, just a few simultaneous inequalities :

a) $\left. \begin{array}{l} x + 2y \leq 1 \\ 2x - y > 7 \end{array} \right\}$

b) $\left. \begin{array}{l} x^2 + 5x \leq 0 \\ x^2 - 4 > 0 \end{array} \right\}$

c) $\left. \begin{array}{l} x^2 - 4x + 3 \leq 0 \\ x^2 - 9 \geq 0 \end{array} \right\}$

GOOD LUCK !!!