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)** $\dfrac{7}{x+2} - \dfrac{3}{x-2} = \dfrac{8}{45}$

Exercise 2: Solve 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) $x^2 - 2x - 15 \le 0$
   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) $\left.\begin{array}{l} x+2y\le1 \\ 2x-y>7 \end{array}\right\}$
   b) $\left.\begin{array}{l} x^2+5x\le0 \\ x^2-4>0 \end{array}\right\}$
   c) $\left.\begin{array}{l} x^2-4x+3\le0 \\ x^2-9\ge0 \end{array}\right\}$

GOOD LUCK !!!