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

Exercise 1: (2.25 points) Work out:

a) $\frac{5}{x+3}-\frac{x-2}{x-1}+\frac{7}{x^2+2x-3}=\frac{-x^2+4x+8}{x^2+2x-3}$ **(1.5)**

b) $7x-2(x-4)\leq 5(2x+3)-1 \rightarrow x\in\left[-\frac{6}{5},+\infty\right)$ **(0.75)**

Exercise 2: (2 points) Solve the following radical equations:

a) $\sqrt{2x+1}+x=7 \rightarrow \boxed{x=4}$ **(0.75)**

b) $\sqrt{3x-3}-\sqrt{x-3}=2 \rightarrow \boxed{x=4 \text{ double}}$ **(1.25)**

Exercise 3: (2.75 points) Solve the following non-linear simultaneous equations with two variables:

a) $\left.\begin{matrix} x-y=3 \\ x^2-2y^2=17 \end{matrix}\right\} \rightarrow \boxed{(5,2) \quad (7,4)}$ **(1.25)**

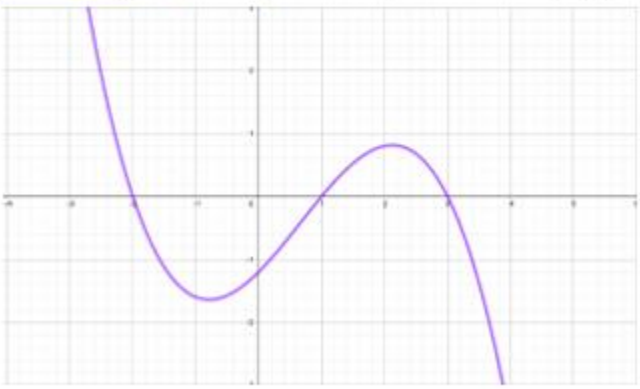
b) $\left.\begin{matrix} xy=12 \\ 3x^2-y^2=11 \end{matrix}\right\} \rightarrow \boxed{(3,4) \quad (-3,-4)}$ **(1.5)**

Exercise 4: (2.5 points) Solve the following systems of inequalities:

a) $\left.\begin{matrix} x^2-3x-10>0 \\ 1-x^2\leq 0 \end{matrix}\right\} \rightarrow x\in(-\infty,-2)\cup(5,+\infty)$

b) $\left.\begin{matrix} x^2-2x+1>0 \\ x^2-9\leq 0 \end{matrix}\right\} \rightarrow x\in[-3,1)\cup(1,3]$

Exercise 5: (0.5 points) Find the points where $f(x)\geq 0$:



$x\in(-\infty,-2]\cup[1,3]$