GLOBAL TEST - 3º ESO

Exercise 1: (1 pto) This table represents the values of a certain random variable. Find Pearson's coefficient of variation $\boxed{CV = 0.7}$

x_i	0	1	2	3
f_i	5	9	7	4

Exercise 2: (1.25 ptos) Work out:

a) $\sqrt[7]{a^2}\cdot\sqrt{a^{-1}}:\sqrt[3]{a^{-5}} = a\cdot\sqrt[42]{a^{19}}$ (0.5)

b) $x^2+(2x-5)^2=10 \rightarrow \boxed{x=1} \quad \boxed{x=3}$ (0.75)

Exercise 3: (0.75 ptos) Find the value of *k* so that when dividing $P(x)=x^3-kx^2+7x-5$ by $(x-2)$ the remainder is 1 $\boxed{k=4}$

Exercise 4: (1.75 ptos) Factorize the following polynomials and indicate their roots:

a) $P(x)=x^4-13x^2+36 \rightarrow \begin{cases}\text{Roots: } x=\pm 2, \quad x=\pm 3\\ \text{Factorization: } (x+3)(x+2)(x-2)(x-3)\end{cases}$ (0.75)

b) $P(x)=x^4+5x^3+8x^2+4x \rightarrow \begin{cases}\text{Roots: } x=0, \quad x=-1, \quad x=-2 \text{ double}\\ \text{Factorization: } x(x+1)(x+2)^2\end{cases}$ (1)

Exercise 5: (1 pto) Find the axial diagonal and the area of a cuboid with sides of lengths 10 cm, 12 cm and 15 cm $\boxed{D=21.66\text{ cm}}$ $\boxed{A=900\text{ cm}^2}$

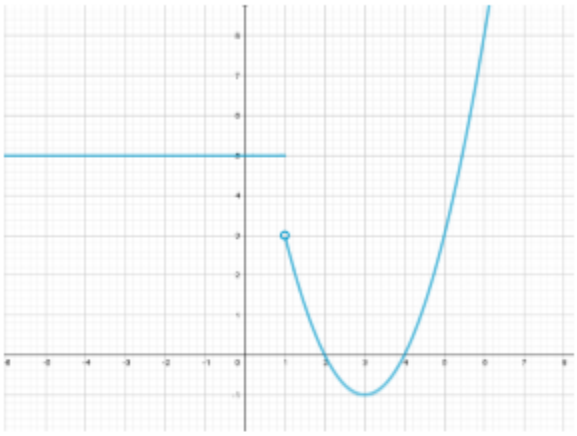
Exercise 6: (2 ptos)

a) Find the general equation of the line that goes through the points $P(-1,4)$ and $Q(1,6)$ (0.75)

$\boxed{x-y+5=0}$

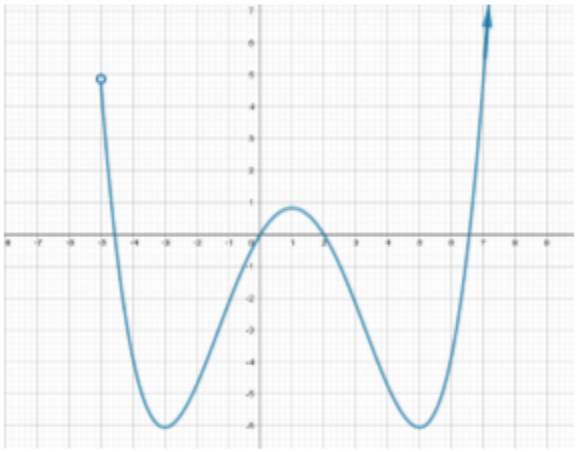
b) Plot the following piecewise function, studying all the characteristics of the parabola: (1.25)

$$f(x)=\begin{cases}5 & x\le 1\\ x^2-6x+8 & x>1\end{cases}$$



Exercise 7: (0.75 ptos) Find the value of x: $\boxed{x=40}$

Exercise 8: (1.5 ptos) Given the following graph of a certain function:



a) Indicate its domain and its image $\text{Dom } f=(-5,+\infty)$ $\text{Im } f=[-6,+\infty)$

b) Study its monotony Increases: $(-3,1)\cup(5,+\infty)$ Decreases: $(-5,-3)\cup(1,5)$

c) Study the extrema

Relative maxima: $x=1$ Absolute maximum: $\nexists$

Relative minima: $x=-3,\quad x=5$ Absolute minimum: $x=-3,\quad x=5$