SIMULTANEOUS EQUATIONS AND FUNCTIONS TEST - 2° ESO

Exercise 1: (1.5 points) Solve and **classify** the following systems of equations using the substitution method:

a) $\left.\begin{array}{l} 2x+y=1 \\ 3x-2y=-23 \end{array}\right\}$ $\boxed{x=-3}$ $\boxed{y=-7}$ Consistent independent

b) $\left.\begin{array}{l} 5x-y=4 \\ 10x-2y=7 \end{array}\right\}$ There is no solution. Inconsistent

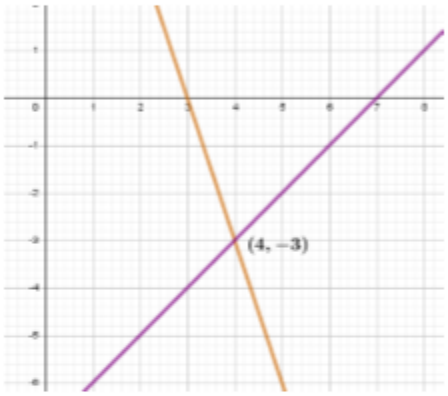
Exercise 2: (1.5 points) Solve and **classify** these simultaneous equations using the elimination method:

a) $\left.\begin{array}{l} 4x+5y=15 \\ x-4y=9 \end{array}\right\}$ $\boxed{x=5}$ $\boxed{y=-1}$ Consistent independent

b) $\left.\begin{array}{l} 5x+3y=15 \\ 7x-2y=-10 \end{array}\right\}$ $\boxed{x=0}$ $\boxed{y=2}$ Consistent independent

Exercise 3: (1 point) Solve and classify the following system of equations, using the graphical method:

$\left.\begin{array}{l} 3x+y=9 \\ x-y=7 \end{array}\right\}$



Exercise 4: (0.75 points) In a restaurant, they have tables for three persons and tables for four persons. If they have a total of twenty nine tables and they can sit one hundred and four people, how many tables of each type do they have? 12 tables for three people and 17 tables for four people

Exercise 5: (0.75 points) If I buy two kilos of potatoes and one kilo of apples I have to pay 5€, but if I buy four kilos of potatoes and three kilos of apples, I have to pay 12€. What's the price of a kilo of each product? A kilo of potatoes costs 1.5€ and a kilo of apples costs 2€

Exercise 6: (1.25 points) Plot the graph of the following functions:

a) $y=2-x$

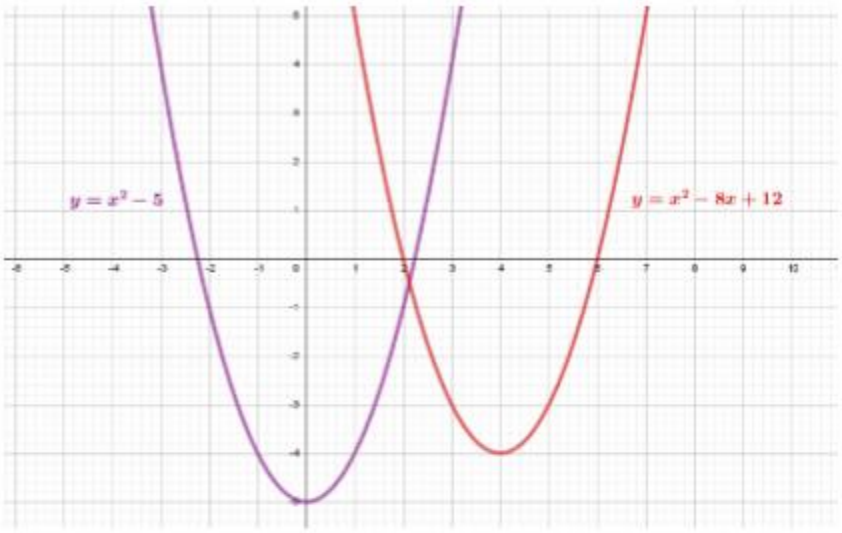
b) $y=\frac{x}{3}+2$

c) $y=\frac{x-1}{2}$

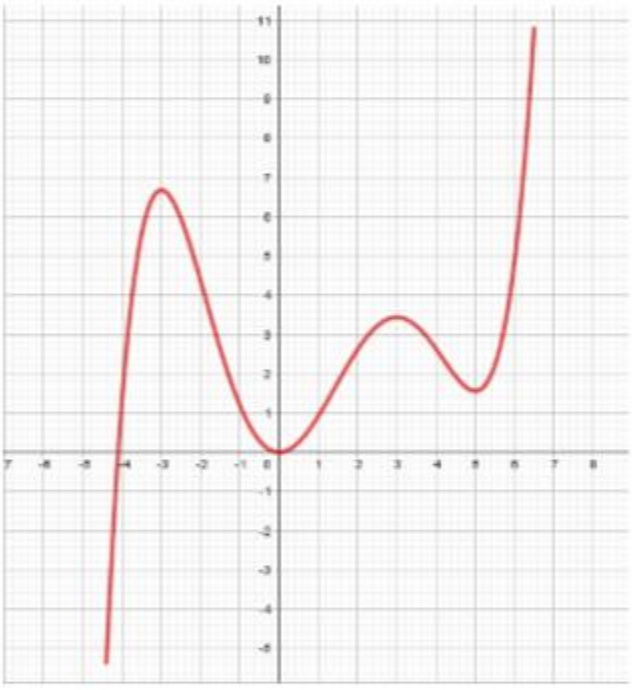
Exercise 7: **(1.5 ptos)** Plot the graph of the following functions:

a) $y = x^2 - 5$

b) $y = x^2 - 8x + 12$



Exercise 8: **(1.75 points)** Given the graph of the following function:



a) Indicate its domain and its image. Is it a continuous function?

$\text{Dom } f = (-4.3, 6.5)$ $\text{Im } f = (-5.25, 10.8)$ It's continuous

b) Determine the points where the function crosses the axes $\underline{OX}$ $x = -4.1,\ x = 0$ $\underline{OY}$ $y = 0$

c) Study its monotony Increases: $(-4.3, -3) \cup (0, 3) \cup (5, 6.5)$ Decreases: $(-3, 0) \cup (3, 5)$

d) Study the extrema

Relative maxima: $x = -3,\ x = 3,\ x = 6.5$ Absolute maximum: $x = 6.5$

Relative minima: $x = -4.3,\ x = 0,\ x = 5$ Absolute minimum: $x = -4.3$