FUNCTIONS TEST - 3º ESO

Exercise 1: (0.5 points) Draw a graph that doesn’t represent a function. Why?

Exercise 2: (1.75 points) Given the following graph of a certain function:

- Indicate its domain and its image. Is it a continuous function? Why?
- Determine the points where the function crosses the axes
- Study its monotony
- Study the local and global extrema

Exercise 3: (0.75 points) Work out the graph of a function that fulfills all the following characteristics at the same time:
- Its domain is \((-7, -1] \cup [2, +\infty)\)
- It crosses the axes at the points (-5,0) and (3,0)
- It has a minimum at x = -3 and a maximum at x=7, either local or global

Exercise 4: (2.25 points)
- Work out the equation of the straight line that passes through the point A(5, -1) and has a slope m = -3
- Work out the equation of the straight line that passes through the points A(-2, 1) and B(6, 5)
- Work out the equation of the straight line that is parallel to \(6x - 2y + 7 = 0\) and passes through the point P(2, -5)

Exercise 5: (0.75 points) Indicate the value of the slope of the straight line \(5x - 7y - 9 = 0\), and the point where it crosses the y-axis
**Exercise 6: (1.75 points)** Draw the graph of the function \( f(x) = -x^2 + 7x - 12 \), indicating its direction, studying the points where it crosses the axes and finding the coordinates of the vertex.

**Exercise 7: (2.25 points)** Draw the graph of the piecewise function given below

\[
f(x) = \begin{cases} 
4 & x < -2 \\
5 - 3x & -2 \leq x \leq 1 \\
x^2 - 6x + 8 & 1 < x < 6 
\end{cases}
\]