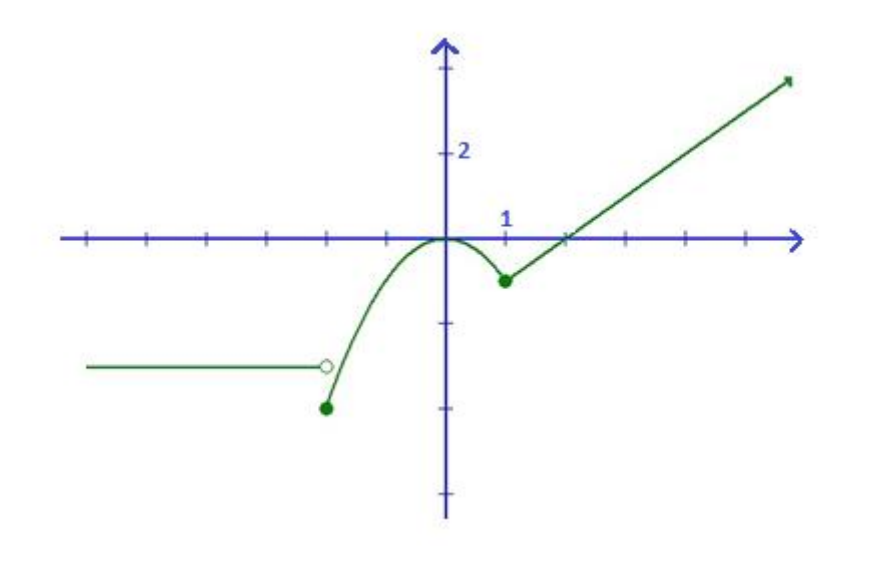
FUNCTIONS TEST - 3º ESO

Exercise 1: (1.75 points) Given the following graph of a certain function:



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

Exercise 2: (1 point) Plot the graph of a function that fulfills all the following characteristics at the same time:

a) Its domain is $(-\infty, 2] \cup [4, 9)$
b) It crosses the axes at the points (-2,0) and (0,5)
c) It has minima at x = -5 and x = 3 and a maximum at x = -7, either local or global

Exercise 3: (2.25 points)

a) Work out the equation of the straight line that passes through the point A(4, -3) and has a slope m = -2
b) Work out the equation of the straight line that passes through the points A(-4, 2) and B(8, 6)
c) Work out the equation of the straight line that is parallel to $y = 4x - 5$ and passes through the point P(-2, 5)

Exercise 4: (0.75 points) Indicate the value of the slope of the straight line $7x - 5y - 2 = 0$, and the point where it crosses the y-axis

Exercise 5: **(2 points)** Draw the graph of the function $f(x)=x^2+4x+4$, indicating its direction, studying the points where it crosses the axes and finding the coordinates of the vertex. Construct also a table with at least a couple of values.

Exercise 6: **(2.25 points)** Plot the graph of the piecewise function given below

$$f(x)=\begin{cases}2x-2 & -5\le x<1\\ x^2-4x+3 & 1\le x<4\\ 3 & x>4\end{cases}$$