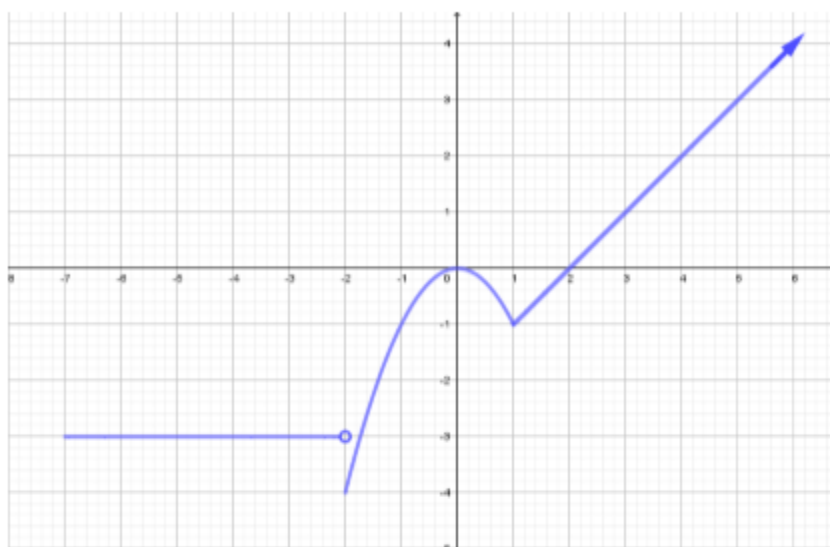


## FUNCTIONS TEST - 3º ESO

**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)** Plot 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

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