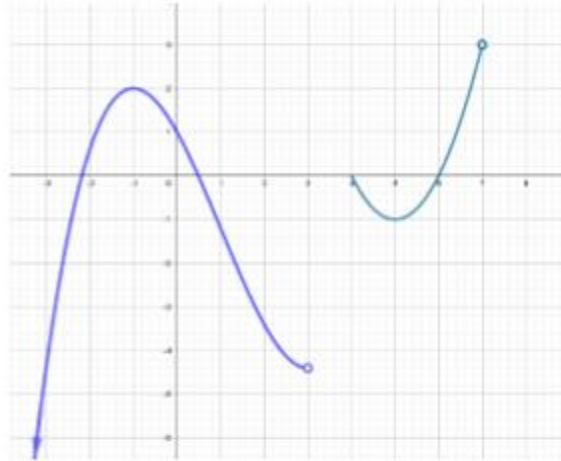




## FUNCTIONS TEST – 4° ESO



**Exercise 1: (1.5 ptos)** Given the following graph of a certain function:



- Indicate the domain and the image
- Study the monotony
- Indicate the relative and absolute extrema

**Exercise 2: (1.5 ptos)**

- Find the **general** equation of the straight line that goes through the points  $A(-3, 4)$  and  $B(5, 2)$
- Find a straight line that's parallel to  $r \equiv 5x - y - 9 = 0$  going through the point  $P(-4, 2)$

**Exercise 3: (1.5 ptos)** Find the domain of the following functions:

a)  $f(x) = \frac{\sqrt{x+1}}{x^2-4}$

b)  $f(x) = \sqrt{x^2 - x - 12}$

**Exercise 4: (1.75 ptos)** Work out:

a)  $\lim_{x \rightarrow 3} \frac{x^2 - 6x + 9}{x^2 - 4x + 3} =$

b)  $\lim_{x \rightarrow 1} \frac{2x+3}{x-1} =$

c)  $\lim_{x \rightarrow +\infty} \left( \frac{x^2 - 2x}{x-1} - x \right) =$

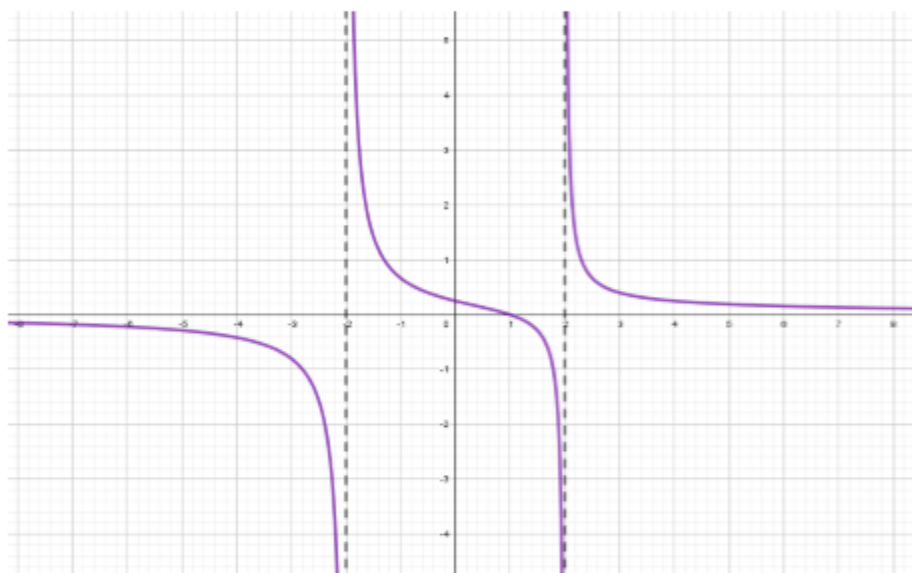


**Exercise 5: (1 pto)** Plot the graph of the function  $f(x) = -x^2 + 2x$ , finding the points where it crosses the axes, the coordinates of the vertex and as many more points as necessary

**Exercise 6: (1 pto)** Find the asymptotes of the following functions:

a)  $f(x) = \frac{3x^2 - 7x}{2x^2 - 2}$

b)



**Exercise 7: (1.75 pto)** Sketch the graph of the piecewise function

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

