FUNCTIONS TEST – 3° ESO

Exercise 1: (1.25 points) Work out the domain of the following functions:

a) $f(x)=\dfrac{1}{x^2-9}$ b) $f(x)=\sqrt[3]{x^2-5x+6}$ c) $f(x)=\sqrt{x+5}$

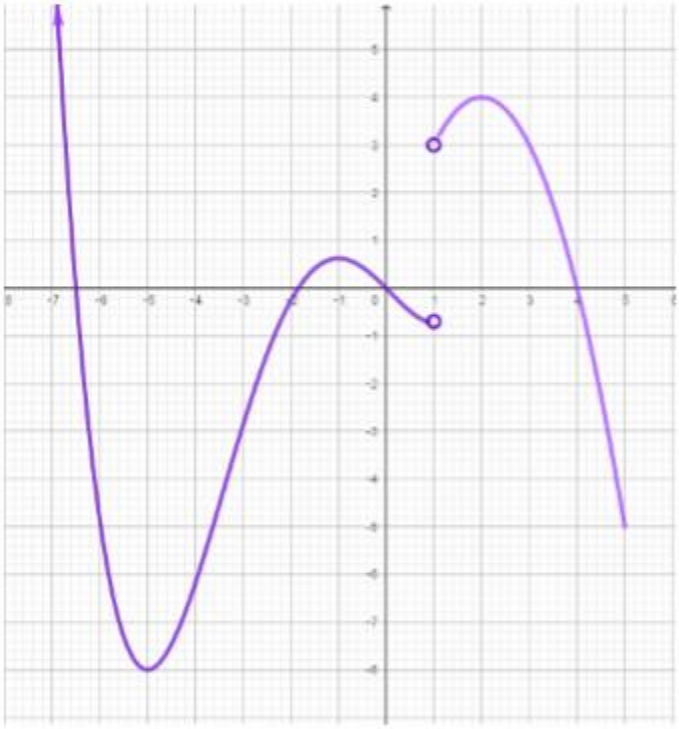
Exercise 2: (1 point) Plot the graph of a function that fulfills all the following characteristics at the same time:

a) Its domain is $[-5,7)$

b) It crosses the axes at the points $(-2,0)$, $(0,3)$ and $(5,0)$

c) It has maxima at $x=-1$ and $x=3$ and a minimum at $x=0$, either local or global

Exercise 3: (1.75 points) Given the following graph of a certain function:



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

b) Determine the points where the function crosses the axes

c) Study its monotony

d) Study the relative and absolute extrema

Exercise 4: (2.5 points)

a) Find the slope and the y-intercept of the straight line $3x+4y-5=0$

b) Work out the **general** equation of the straight line that passes through the points $P(2,-1)$ and $Q(5,1)$

c) Work out the equation of the straight line that is parallel to $5x+y-9=0$ and passes through the point $A(2,-3)$.

Exercise 5: **(1.5 points)** Plot the graph of the function $f(x)=9-x^2$, indicating its direction, studying the points where it crosses the axes and finding the coordinates of the vertex.

Exercise 6: **(2 points)** Plot the graph of the piecewise function given below

$$f(x)=\begin{cases}3x+8 & x\le -2\\ 2 & -2<x\le 1\\ x^2-6x+5 & 1<x<6\end{cases}$$