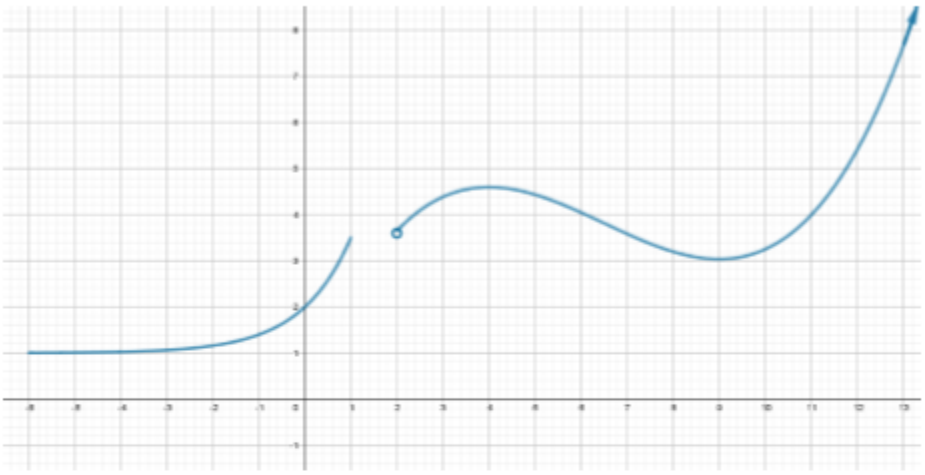
FUNCTIONS TEST – 4° ESO

Exercise 1: (1.5 ptos) Given the following graph of a certain function (the distance between consecutive marks in the axes is one):



a) Indicate the domain and the image
b) Study the monotony
c) Indicate the relative and absolute extrema

Exercise 2: (2.75 ptos) Find the domain of the following functions:

a) $f(x)=\dfrac{5-3x}{x^2-2x-3}$ (0.5)

b) $f(x)=\sqrt{x^2-8x-9}$ (0.75)

c) $f(x)=\dfrac{x^2-2x+1}{\sqrt{9-x^2}}$ (0.75)

d) $f(x)=\dfrac{\sqrt{x-1}}{x^2-3x}$ (0.75)

Exercise 3: (2.5 ptos) Work out:

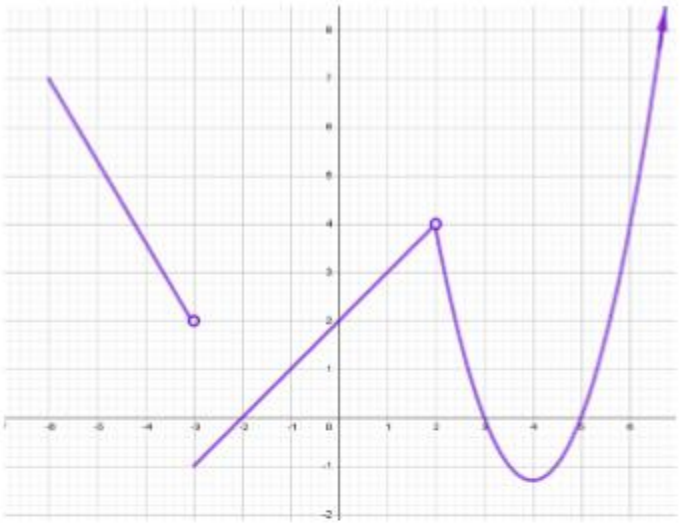
a) $\lim\limits_{x\to 4}\dfrac{x^2-16}{x^2-6x+8}=$ (0.5)

b) $\lim\limits_{x\to +\infty}\dfrac{x^2-4x+3}{x^3+3x^2-x}=$ (0.25)

c) $\lim\limits_{x\to +\infty}\left(2x-\dfrac{2x^2-4x+1}{x-3}\right)=$ (1)

d) $\lim\limits_{x\to 3}\dfrac{1-x}{x-3}=$ (0.75)

Exercise 4: **(1 pto)** Find the following limits:



$\lim_{x\to -3^-} f(x) =$

$\lim_{x\to -3^+} f(x) =$

$\lim_{x\to -3} f(x) =$

$\lim_{x\to 2} f(x) =$

$f(2) =$

$\lim_{x\to +\infty} f(x) =$

Exercise 5: **(2.25 ptos)** Find the asymptotes of the following functions:

a) $f(x) = \dfrac{7x^2+4x+3}{x^2-1}$

b) $f(x) = \dfrac{4x-1}{3x-5}$

c)