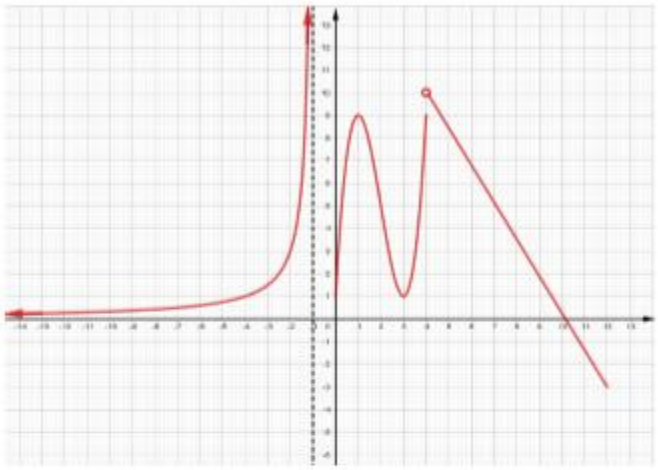
FUNCTIONS AND LIMITS

4º ESO

Exercise 1: (1.5 points) Given the graph of the following function



a) Indicate the domain and the image

b) Study its monotony

c) Study the extrema

Exercise 2: (1 point) Work out the general equation of the straight line that passes through the points $A(5,-2)$ and $B(7,1)$

Exercise 3: (1.5 points) Find the domain of the functions:

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

b) $f(x)=\dfrac{2x+3}{\sqrt[10]{x^2-1}}$ (0.75)

Exercise 4: (2.25 points) Work out the value of these limits:

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

b) $\lim\limits_{x\to-5}\dfrac{x-6}{x+5}=$ (0.75)

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

Turn the page around.

Exercise 5: **(1.5 points)** Find the asymptotes of the following functions:

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

b) $f(x)=\dfrac{x+9}{x^2-25}$

Exercise 6: **(2.25 points)** Plot the piecewise function:

$$f(x)=\begin{cases}5 & x<-1\\ x^2-4x & -1\le x<3\\ 2x-7 & 3\le x<7\end{cases}$$