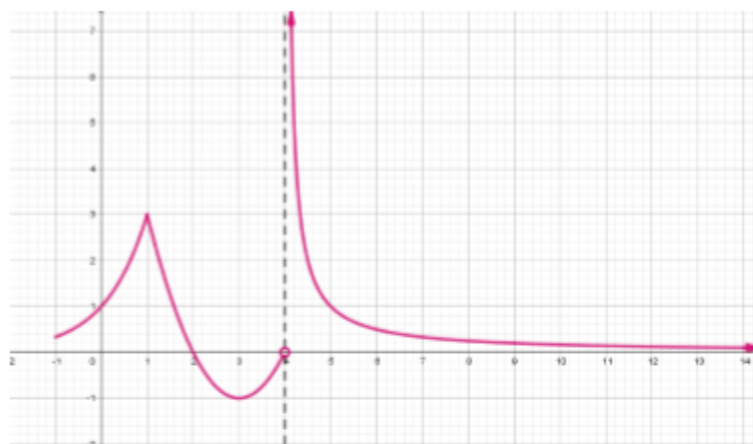


FUNCTIONS TEST - 4º ESO

Exercise 1: (1.75 ptos) Given the following graph of a certain function:



- a) Indicate the domain and the image $\text{Dom } f = [-1, 4) \cup (4, +\infty)$ $\text{Im } f = [-1, +\infty)$
- b) Find the points where the function crosses the axes $\text{OX} \mid x = 2$ $\text{OY} \mid y = 1$
- c) Study the monotony **Increases:** $(-1, 1) \cup (3, 4)$ **Decreases:** $(1, 3) \cup (4, +\infty)$
- d) Indicate the relative and absolute extrema
Relative maxima: $x = 1$ **Absolute maximum:** \cancel{A}
Relative minima: $x = -1, x = 3$ **Absolute minimum:** $x = 3$

Exercise 2: (1.5 ptos) Find the domain of the following functions:

- a) $f(x) = \frac{\sqrt{x-2}}{x^2-16}$ $\text{Dom } f = [2, 4) \cup (4, +\infty)$
- b) $f(x) = \sqrt[4]{x^2+7x+6}$ $\text{Dom } f = (-\infty-6] \cup [-1, +\infty)$

Exercise 3: (0.75 ptos) Find the general equation of the straight line that goes through the points $A(-2, 5)$ and $B(3, 8)$ $3x - 5y + 31 = 0$

Exercise 4: (1 pto) Plot the graph of the function $f(x) = -x^2 + 3x + 4$, finding the points where it crosses the axes, the coordinates of the vertex and as many more points as necessary



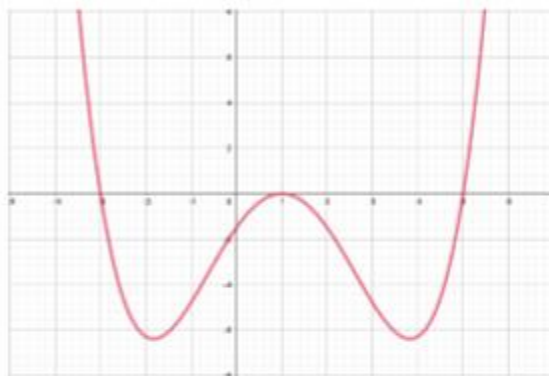
Exercise 5: (1.5 ptos) Work out:

a) $\lim_{x \rightarrow 2} \frac{3x-5}{x-2} = \cancel{A}$

b) $\lim_{x \rightarrow -1} \frac{x^2+8x+7}{x^2-1} = -3$

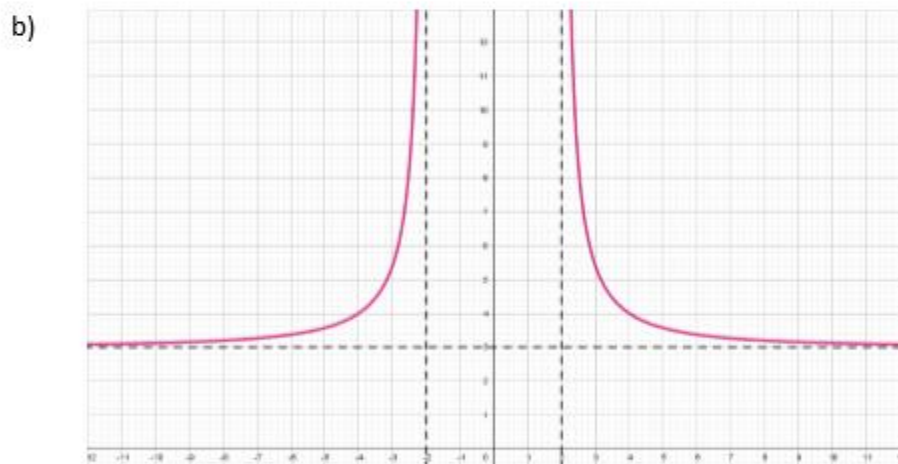
c) $\lim_{x \rightarrow +\infty} \left(x - \frac{x^2-5x+7}{x-3} \right) = 2$

Exercise 6: (0.75 ptos) Sketch the graph of the function $f(x) = (x+3)(x-1)^2(x-5)$



Exercise 7: (1 pto) Find the asymptotes of the following functions:

a) $f(x) = \frac{2x^2-5x}{x^2-1}$ HA $y = 2$ VA $x = \pm 1$



HA $y = 2$
VA $x = \pm 1$



Exercise 8: (1.75 pts) Sketch the graph of the piecewise function

$$f(x) = \begin{cases} 5 & -8 \leq x < -1 \\ x^2 - 4x & -1 < x < 3 \\ 7 - 2x & x \geq 3 \end{cases}$$

