

Cálculo de asíntotas

a) Calcular las asíntotas de $y = \frac{3x}{x+1}$

$$\text{Dom}f(x) = \mathbb{R} - \{-1\}$$

Asíntotas verticales

$$x = -1$$

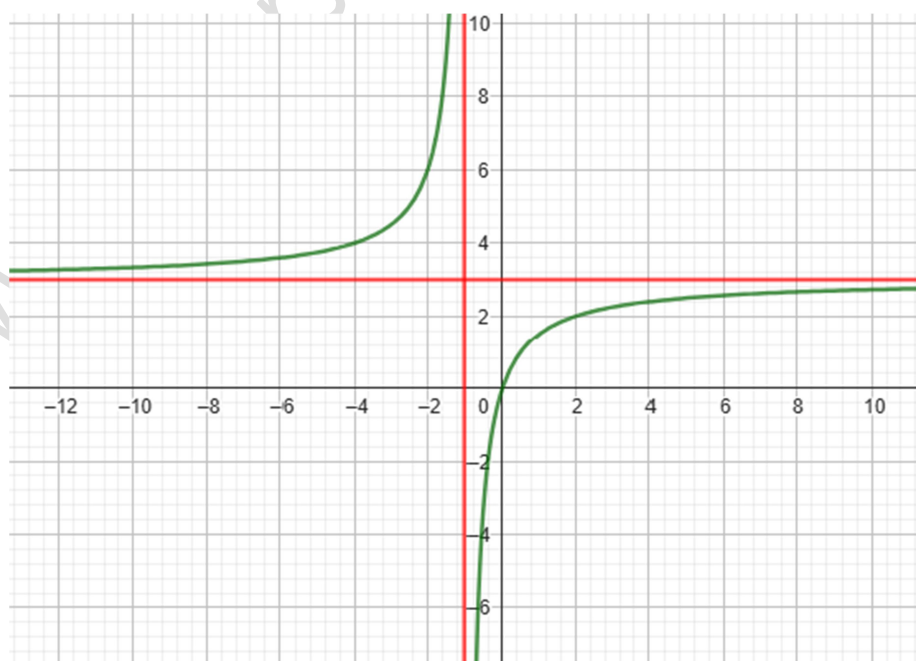
$\lim_{x \rightarrow -1^+} \frac{3x}{x+1} = -\infty$	
$\lim_{x \rightarrow -1^-} \frac{3x}{x+1} = -\infty$	

Asíntotas horizontales

$$y = \lim_{x \rightarrow \infty} \frac{3x}{x+1} = 3$$

$$y = 3$$

$\lim_{x \rightarrow -\infty} \frac{3x}{x+1} = 3^+$	$\frac{3x}{-3x-3} \cdot \frac{ x+1 }{3}$ $y = 3 - \frac{3}{x+1} \quad \begin{cases} +\infty \rightarrow 3^- \\ -\infty \rightarrow 3^+ \end{cases}$	
$\lim_{x \rightarrow +\infty} \frac{3x}{x+1} = 3^-$		



$$Dom f(x) = R - \{1\}$$
 $x = 1$ 1

$y=mx+n$

$$m = \lim_{x \rightarrow \infty} \frac{\frac{x^2 - 4}{x - 1}}{x} = \lim_{x \rightarrow \infty} \frac{x^2 - 4}{x^2 - x} = 1$$

$$m = 1$$

$$n = \lim_{x \rightarrow \infty} \left[\frac{x^2 - 4}{x - 1} - x \right] = \lim_{x \rightarrow \infty} \frac{x^2 - 4 - x^2 + x}{x - 1} = \lim_{x \rightarrow \infty} \frac{x - 4}{x - 1} = 1$$

$$n = 1$$

$$y = x + 1$$
