

$$TVM[0,1] = \frac{1-0}{1} = 1$$

$$TVI(1) = f'(1) = 3$$

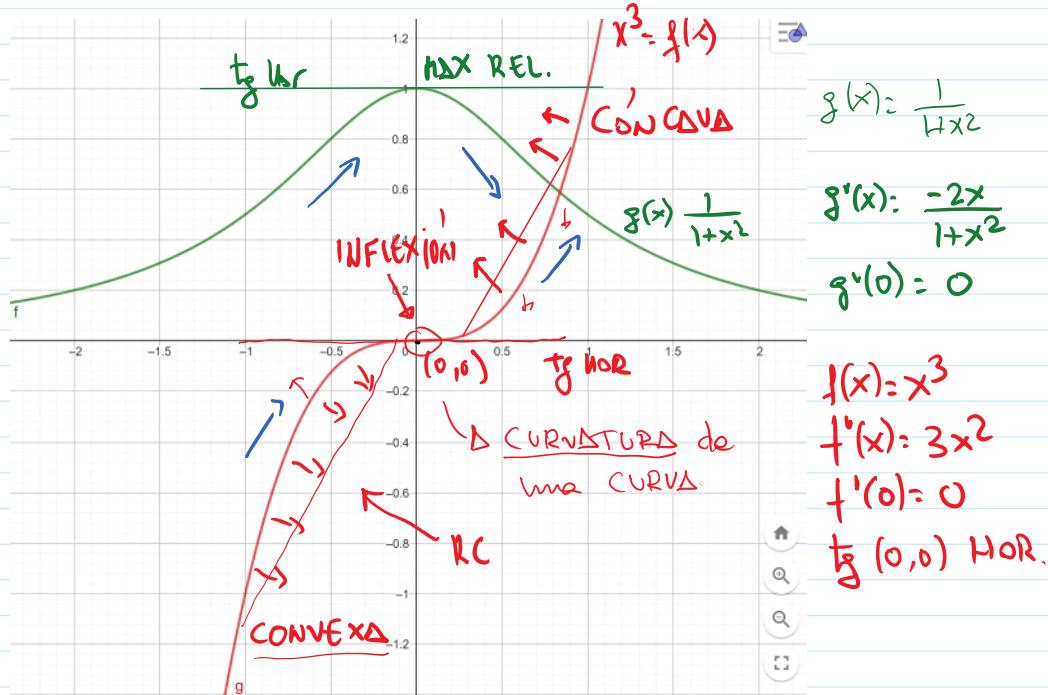
$$f(x) = x^3 \quad f'(x) = 3x^2$$

$$f'(1) = 3$$

$$TVI = \lim_{h \rightarrow 0} TVM[1, 1+h] = \lim_{h \rightarrow 0} \frac{f(1+h) - f(1)}{h} = 3$$

$\frac{f(1+h) - f(1)}{h}$

$f'(1)$



$$f(x) = x^3$$

$$f'(x) = 3x^2$$

$$f'(0) = 0$$

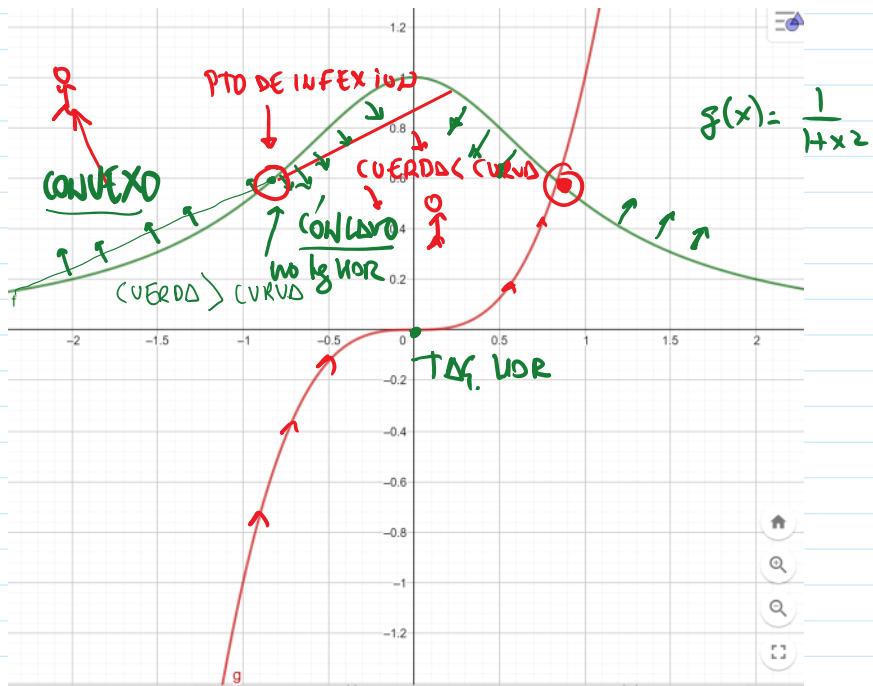
$f(0,0)$ HOR.

$$g(x) = \frac{1}{1+x^2} \rightarrow \text{CONCAVE}$$

$$g'(x) = \frac{(1)(1+x^2) - 1 \cdot 2x}{(1+x^2)^2} = \frac{-2x}{(1+x^2)^2}$$

$1 \quad d \quad -f'(x)$

$$\frac{1}{f(x)} \xrightarrow{d} \frac{-f'(x)}{f^2(x)}$$



$$g(x) = \frac{1}{1+x^2} \quad g'(x) = \frac{-2x}{(1+x^2)^2}$$

$$x=0 \text{ is a critical point}$$

$$\frac{-2x}{(1+x^2)^2} = 0 \Rightarrow -2x = 0 \Rightarrow \boxed{x=0} \quad \text{OK}$$

$$f(x) = x^3$$

$$f'(x) = 3x^2$$

$$f'(x) = 0 \quad x = 0$$

$x=0$ no hay max/min

↓
POSSIBLE
MAX/min

$$g'(x) = \frac{-2x}{(1+x^2)^2}$$

Handwritten notes on a graph showing a function with a local maximum and a local minimum. A blue arrow points to the local maximum, and a red arrow points to the local minimum. The word "signs" is written in blue next to the graph.

A hand-drawn diagram of a horizontal beam. The beam is represented by a blue line. On the left side, there is a vertical blue brace. In the center of the beam, there is a small circle labeled 'O'. On the right side, there is a vertical blue brace and a vertical red brace. The red brace is labeled 'R' at its top and has a double vertical line at its bottom.

$$(-1)^{\frac{1}{2}} = i$$

$$g'(-1) > 0 \quad \downarrow \quad \underline{g'(1) < 0}$$

$x=0$ MAXIMO

$$g(x) = \frac{1}{1+x^2}$$

CRECIENTE $(-\infty, 0)$
DECREciente $(0, +\infty)$

$$f(x) = x^3$$

$$f'(x) = 3x^2 > 0$$

f es CREciente \mathbb{R}



no max/min

$$g(x) = \frac{1}{1+x^2}$$

$$g'(x) = \frac{-2x}{(1+x^2)^2}$$

$$g''(x) = 0$$

Punto Inflexión

$$\frac{-2x}{(1+x^2)^2} \xrightarrow{d}$$

$$\boxed{= 0} \Rightarrow$$