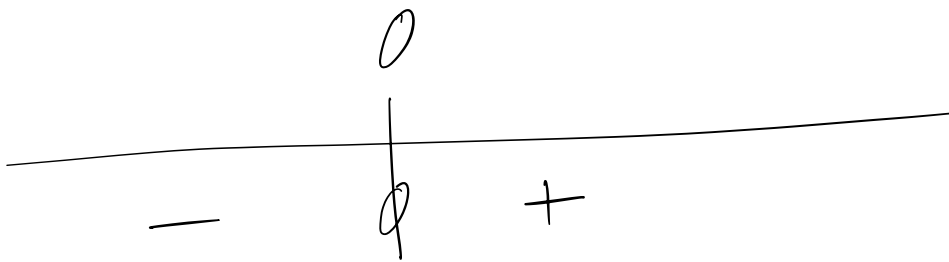


$$f(x) = \frac{x}{x^2+1}$$

① $D_f = \mathbb{R}$ car $x^2+1=0 \Leftrightarrow x^2=-1$, ce qui est impossible

$$f(x) = 0 \Leftrightarrow \boxed{x=0}$$



② Vu que $D_f = \mathbb{R}$, il n'y a pas d'A.V.

$$\text{Vu que } \lim_{x \rightarrow \infty} \frac{x}{x^2+1} = \lim_{x \rightarrow \infty} \frac{x}{x^2} = \lim_{x \rightarrow \infty} \frac{1}{x} = 0,$$

on a une $\boxed{\text{A.H. en } y=0}$

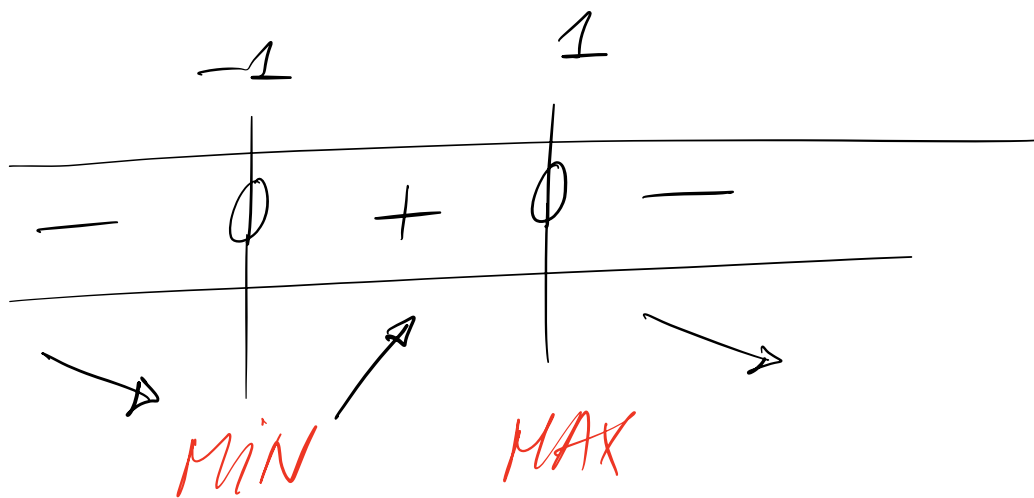
Le signe de f donne la position, dans ce cas.

$$\textcircled{3} \quad f'(x) = \frac{(x)' \cdot (x^2+1) - x \cdot (x^2+1)'}{(x^2+1)^2}$$

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

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

$$f'(x) = 0 \Leftrightarrow x = 1 \quad / \quad x = -1$$



$$\left(-1; -\frac{1}{2}\right) \quad \left(1; \frac{1}{2}\right)$$

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