

Etude de fcts ex suppl.

$$f(x) = \frac{x^3}{x^2-3} \quad \text{zéro: } 0 \text{ (3)} \quad \text{v.i.: } \pm\sqrt{3} \quad \text{car } x^2-3 = (x+\sqrt{3})(x-\sqrt{3})$$

1. $ED(f) = \mathbb{R} - \{\pm\sqrt{3}\}$

2. signe :

3. AV: $\lim_{x \rightarrow +\sqrt{3}} f(x) = \frac{(\sqrt{3})^3}{0} = \infty \Rightarrow x = \sqrt{3}$ est une AV

$\lim_{x \rightarrow -\sqrt{3}} f(x) = \frac{(-\sqrt{3})^3}{0} = \infty \Rightarrow x = -\sqrt{3}$ " "

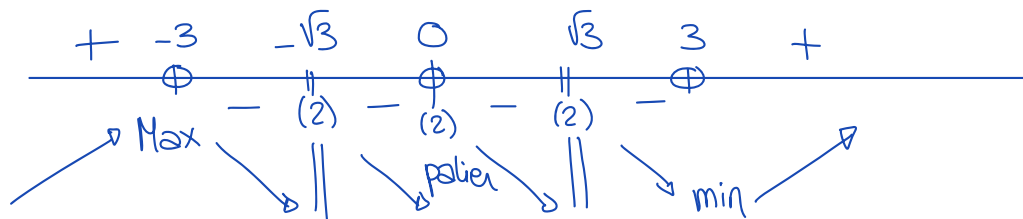
At/AO: AO car $\deg(N) = \deg(D) + 1 : 3 = 2 + 1$

$$\begin{array}{r} x^3 \\ -x^3 + 3x \\ \hline 3x \end{array} \quad \left| \begin{array}{r} x^2-3 \\ x \end{array} \right. \Rightarrow f(x) = x + \frac{3x}{x^2-3} \Rightarrow y=x \text{ est l'AO}$$

zéro: 0, f coupe l'AO en (0;0)

3. croissance: $f'(x) = \frac{3x^2(x^2-3) - x^3 \cdot 2x}{(x^2-3)^2} = \frac{x^2(3(x^2-3) - 2x^2)}{(x^2-3)^2}$

$$= \frac{x^2(x^2-9)}{(x^2-3)^2} = \frac{x^2(x+3)(x-3)}{(x^2-3)^2} \quad \text{zéros: } \pm 3 \text{ et } 0(2) \quad \text{v.i.: } \pm\sqrt{3} \text{ (2)}$$



Max $(-3; f(-3)) = (-3; -\frac{9}{2})$

point $(0; 0)$

min $(3; f(3)) = (3; \frac{9}{2})$

5. graphe :

