

$$f(x) = \frac{x^3 - 1}{x^2 - 5x + 6} \stackrel{\text{factoriser}}{=} \frac{\overbrace{(x-1)(x^2+x+1)}^{\Delta < 0}}{(x-3)(x-2)}$$

ANALYSE

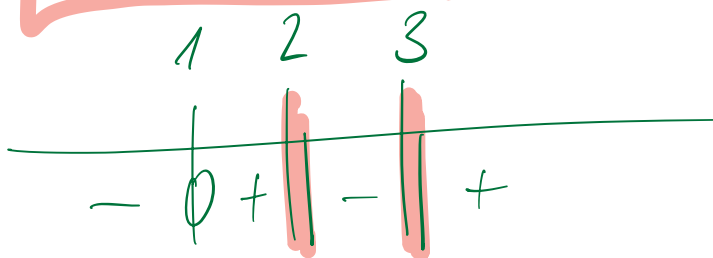
$$f(0) = -\frac{1}{6}$$

(0 | $-\frac{1}{6}$)

① ED_f / Zeros / Signe

② ASYMPTOTES (A.V. / A.H. / A.O.)

① Zeros: $x=1$ $D_f = \mathbb{R} - \{2; 3\}$



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

② A.V.

$$\lim_{x \rightarrow 2} f(x) = \ll \frac{1 \cdot 7}{0 \cdot (-1)} \gg = \ll \frac{7}{0} \gg = \infty$$

\Rightarrow A.V. en $x=2$ / A.V. en $x=3$

$$\lim_{x \rightarrow 3} f(x) = \ll \frac{2 \cdot 13}{1 \cdot 0} \gg = \ll \frac{26}{0} \gg = \infty$$

$$\textcircled{3} \quad \deg(x^3-1) - \deg(x^2-5x+6) = 1$$

\Rightarrow A.O.

~~A.A.~~

$$\begin{array}{r|l}
 x^3 - 1 & x^2 - 5x + 6 \\
 \hline
 x^3 - 5x^2 + 6x & x + 5 \\
 \hline
 5x^2 - 6x - 1 & \\
 5x^2 - 25x + 30 & \\
 \hline
 19x - 31 &
 \end{array}$$

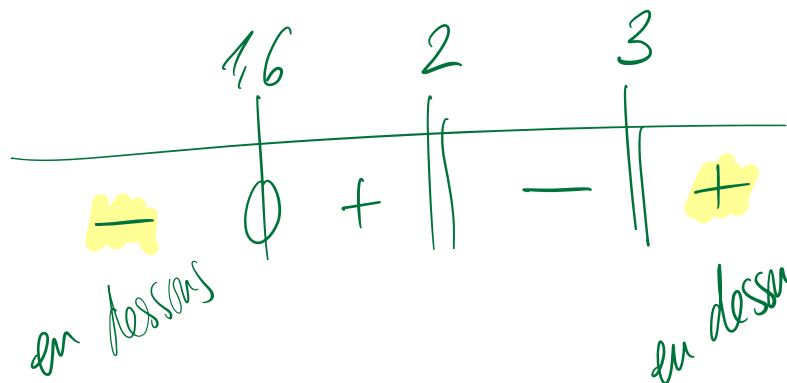
A.O. en
 $y = x + 5$

Position de la fonction par rapport à $y = x + 5$?

(δ pour difference)

$$\delta(x) = \frac{19x - 31}{x^2 - 5x + 6} = \frac{19x - 31}{(x-3)(x-2)}$$

$$\delta(x) = 0 \Leftrightarrow x = \frac{31}{19} \approx 1,6$$



$(1,6; f(1,6))$

$$\delta(0) = -\frac{31}{6} < 0$$

$y = mx + b$
↑
pente ↑ O.O.

A.O.
 $y = x + 5$
 $= \frac{1}{1} \cdot x + 5$

