

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

$$f(0) = \frac{3}{2} = 1,5$$

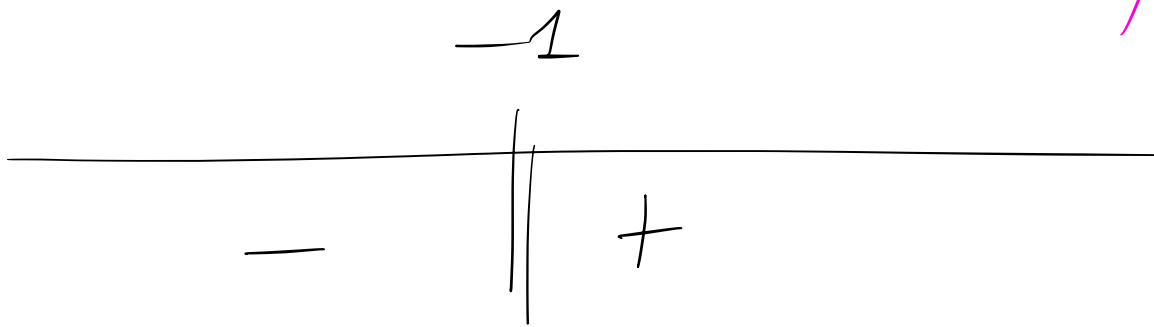
↑
0.0.

$$\textcircled{1} D_f = \mathbb{R} - \{-1\}$$

$$f(x) = 0 \Rightarrow x^2+3=0 \Leftrightarrow x^2=-3, \text{ ce qui est impossible}$$

La fonction n'a pas de zéros.

$$f(0) = 1,5 > 0$$



$$\textcircled{2} \lim_{x \rightarrow -1} f(x) = \lim_{x \rightarrow -1} \frac{x^2+3}{2(x+1)} = \left\langle \frac{4}{0} \right\rangle = \infty$$

⇒ A.V. en $x = -1$

$$\deg(x^2+3) - \deg(2x+2) = 2-1 = 1 \Rightarrow \text{A.O.}$$

~~A.H.~~

$$\begin{array}{r|l}
 x^2+3 & 2x+2 \\
 \hline
 x^2+x & \frac{1}{2}x - \frac{1}{2} \\
 \hline
 -x+3 & \\
 -x-1 & \\
 \hline
 & 4
 \end{array}$$

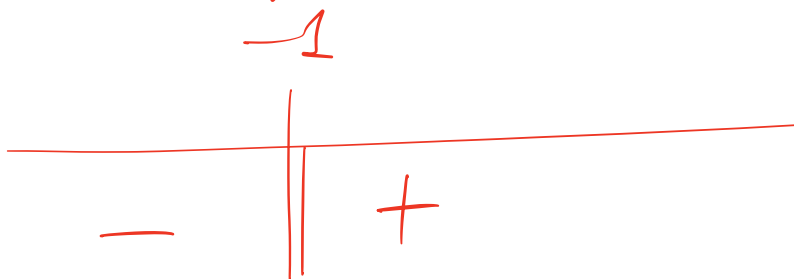
On a une A.O. en

$$y = \frac{1}{2}x - \frac{1}{2}$$

$$x^2+3 = \frac{1}{2}(x-1)(2x+2) + 4$$

$$\frac{x^2+3}{2x+2} = \frac{1}{2}(x-1) + \boxed{\frac{4}{2x+2}}$$

Position: signe de $\delta(x)$



dessous
dessus

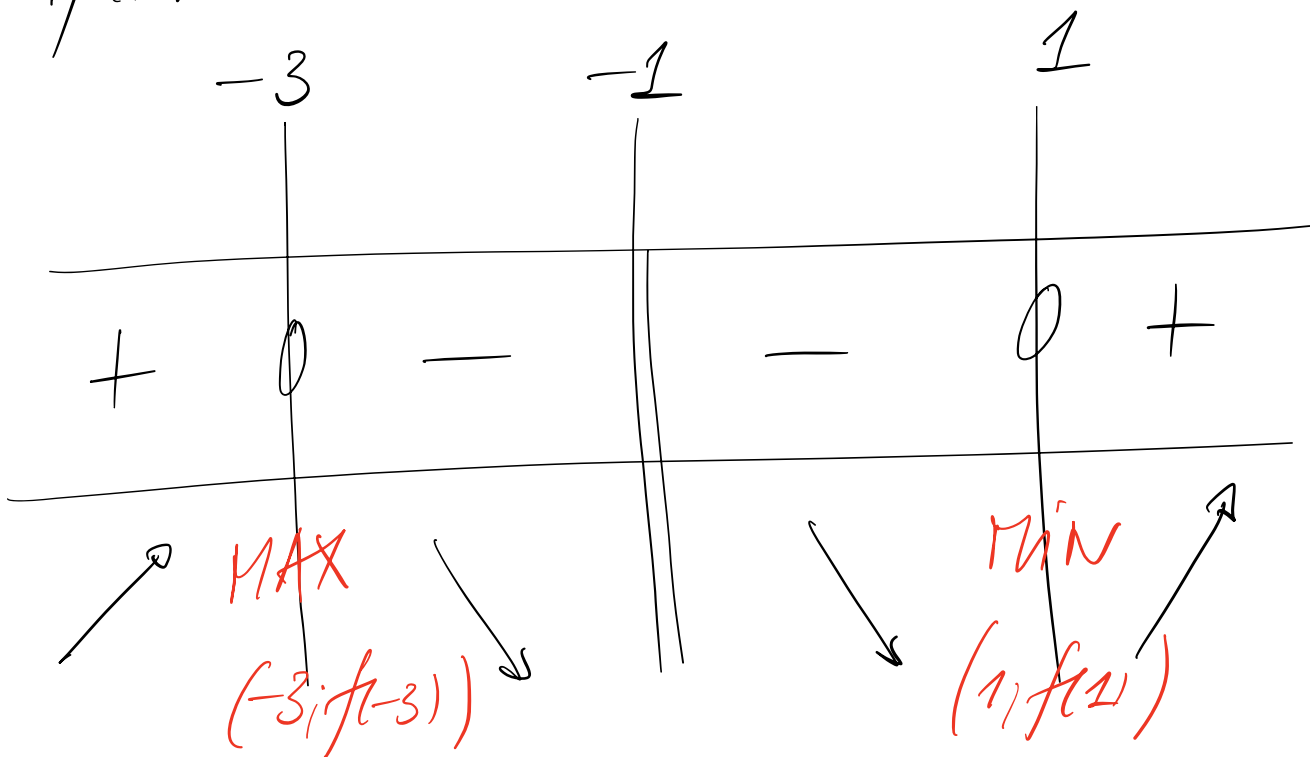
$$\textcircled{3} \quad f'(x) = \left(\frac{x^2+3}{2x+2} \right)' = \frac{(x^2+3)' \cdot (2x+2) - (x^2+3)(2x+2)'}{(2x+2)^2}$$

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

$$= \frac{4x^2+4x-2x^2-6}{(2x+2)^2} = \frac{2x^2+4x-6}{(2x+2)^2}$$

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

$$f'(x) = 0 \Leftrightarrow x=1 \text{ ou } x=-3$$



Maximum: $(-3; -3)$ cor $f(-3) = \frac{(-3)^2 + 3}{2 \cdot (-3) + 2} = \frac{12}{-4}$

Minimum: $(1; 1)$ cor $f(1) = \frac{1^2 + 3}{2 \cdot 1 + 2} = \frac{4}{4}$

4

