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

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

$\uparrow$ O.O.

① $D_f = \mathbb{R} - \{-1\}$

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

La fonction n'a pas de zeros.

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

	-1	
$-$	$\|\|$	$+$

② $$\lim_{x \to -1} f(x) = \lim_{x \to -1} \frac{x^2+3}{2(x+1)} = \text{«} \frac{4}{0} \text{»} = \infty$$

$$\boxed{\Rightarrow \text{A.V. en } x = -1}$$

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

~~A.H.~~

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

On a une A.O. en

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

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

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

<u>Position :</u> Signe de δ

	-1	
$-$	$\Vert$	$+$
dessous		dessus

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

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

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

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

$f'(x) = 0 \iff x=1$ ou $x=-3$

x		-3		-1		1	
$f'(x)$	$+$	0	$-$	‖	$-$	0	$+$
f	↗	MAX $(-3; f(-3))$	↘	‖	↘	MIN $(1; f(1))$	↗

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

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

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