12.12.25

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

1) $x^2 - 4 = 0$

$(x-2)(x+2) = 0 \Rightarrow ED(f) = \mathbb{R} - \{-2; 2\}$

2) $p = x^3 - 3x^2 + 2$

$p(1) = 0 \Rightarrow$

	1	−3	0	2
1		1	−2	−2
	1	−2	−2	0

$x^2 - 2x - 2 = 0$

$\Delta = 4 + 8 = 12 = (2\sqrt{3})^2$

$x_1 = \dfrac{2 + 2\sqrt{3}}{2} = 1 + \sqrt{3} \cong 2{,}7$

$x_2 = 1 - \sqrt{3} \cong -0{,}7$

x		-2		$-0{,}7$		1		2		$2{,}7$	
$f(x)$	−	‖	+	0	−	0	+	‖	−	0	+

2,7; ~~-0,7~~; ~~1~~; ~~x_1~~; ~~-2~~

3) AV:

$x = -2$: $\lim\limits_{x \to -2} f(x) = \infty$ "$\frac{-18}{0}$"

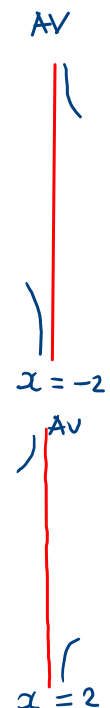
$\lim\limits_{\substack{x \to -2 \\ <}} f(x) = -\infty$

$\lim\limits_{\substack{x \to -2 \\ >}} f(x) = +\infty$

$x = 2$: $\lim\limits_{x \to 2} f(x) = \infty$ "$\frac{-2}{0}$"

$\lim\limits_{\substack{x \to 2 \\ <}} f(x) = +\infty$

$\lim\limits_{\substack{x \to 2 \\ >}} f(x) = -\infty$



4) AH/AO :

$$\begin{array}{r|l} x^3 - 3x^2 + 2 & x^2 - 4 \\ \hline -\,(x^3 - 4x) & x - 3 \\ \hline -3x^2 + 4x & \\ -(-3x^2 + 12) & \\ \hline r:\ 4x - 10 & \end{array}$$

$$f(x) = \underbrace{x - 3}_{} + \underbrace{\frac{4x - 10}{x^2 - 4}}_{}$$

AO: $y = x - 3$

: zéro : $4x = 10$

$x = \frac{5}{2}$

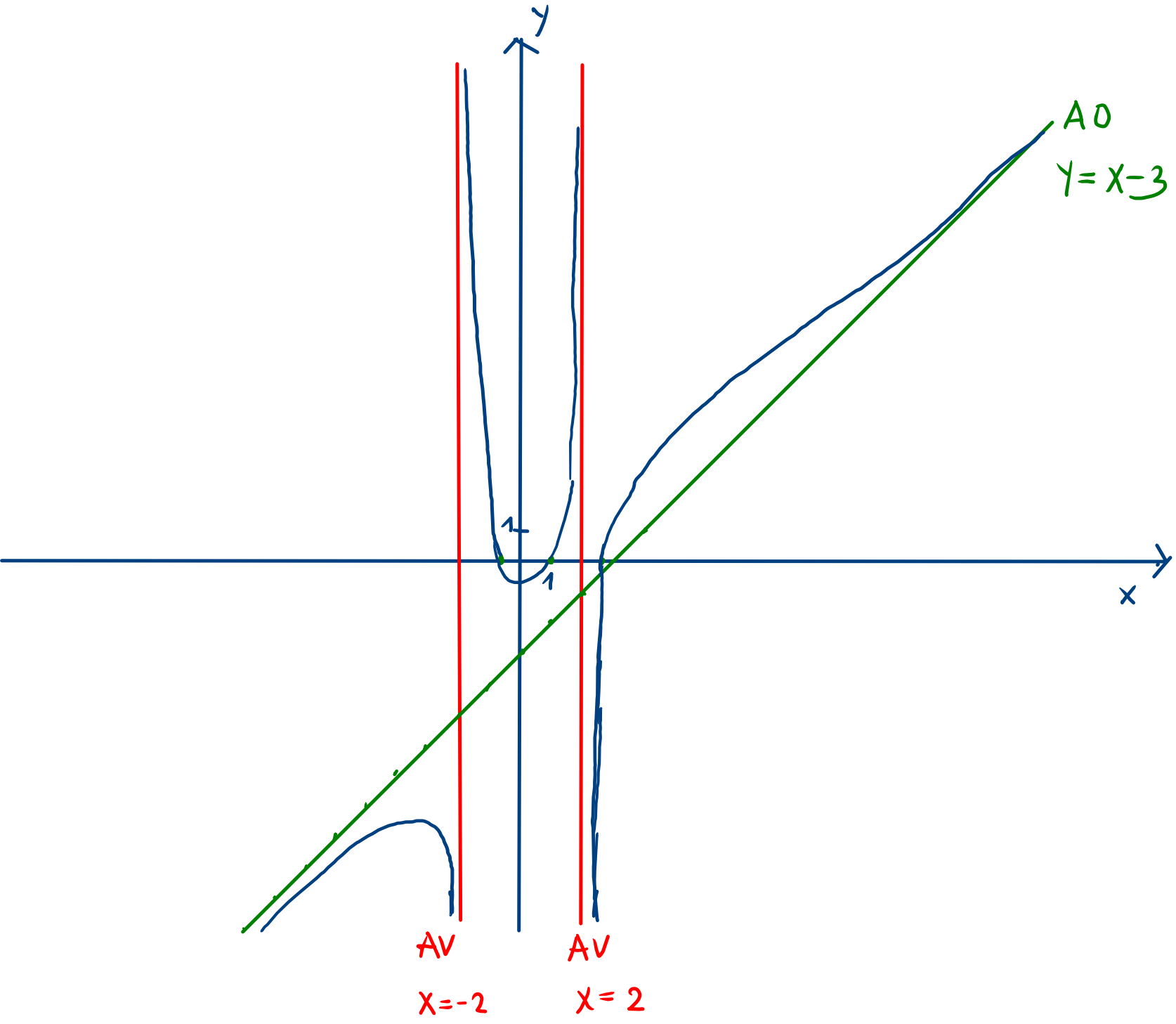
$S(x)$

Position entre l'AO et la courbe:

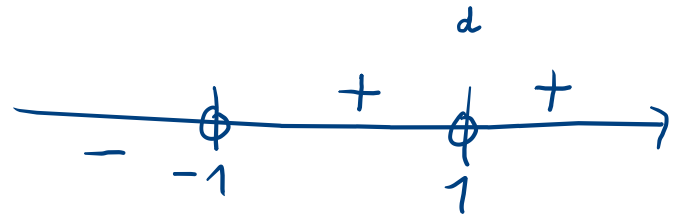
x		-2		2		$5/2$	
$S(x)$	$-$	‖	$+$	‖	$-$	0	$+$
	dessous	‖	dessus	‖	dessous	↑	dessus
						coupe	

-2 ; 2

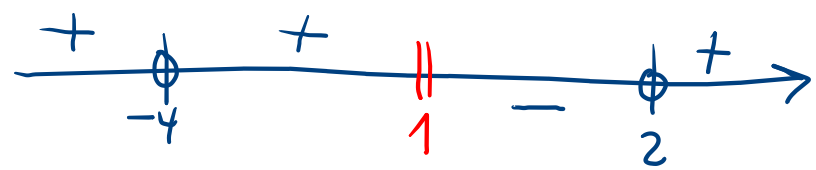
$2{,}5$


y
x
1
1
AO
Y = X - 3
AV
X = -2
AV
X = 2

$$f(x) = (x-1)^8 (x+1)$$

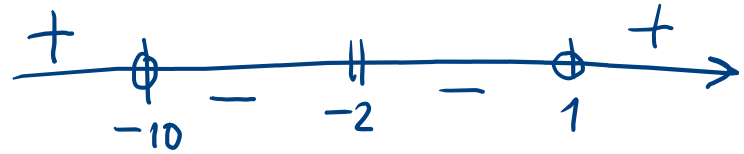


$$\frac{(x-2)^3 (x+4)^4}{(x-1)}$$

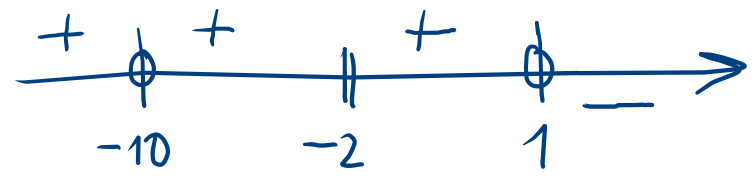


2 −4 1

$$\frac{(x+10)^5 (x-1)}{(x+2)^2}$$



$$f(x) = \frac{(x+10)^6 (1-x)^3}{(x+2)^2}$$



x	-10		-2		1	
$(x+10)^6$	+	0	+		+	
$(1-x)^3$	+		+		0	−
$(x+2)^2$	+		+	‖	+	
$f(x)$	+	0	+	‖	+	0	−