FRACTIONS DE POLYNÔMES

$$f(x) = a(x - x_1)(x - x_2)$$

$$g(x) = \frac{ax+b}{cx+d}$$

Homographique

Exemple :

$$g(x) = \frac{3x-2}{2x-3}$$

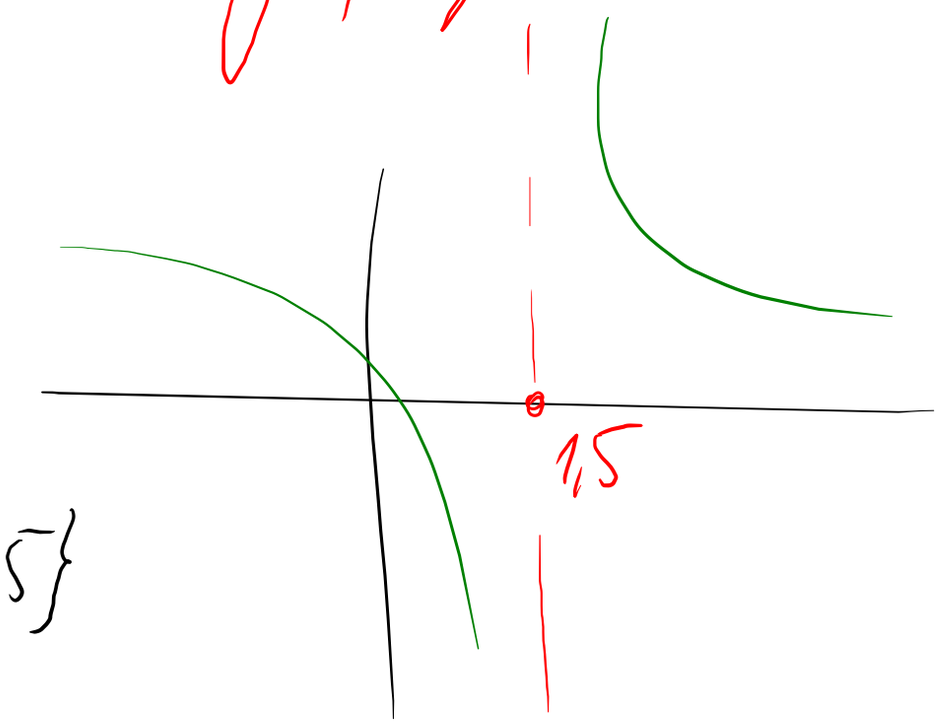
$2x - 3 = 0$

$2x = 3$

$x = 1,5$

$ED_g = \mathbb{R} - \{1,5\}$

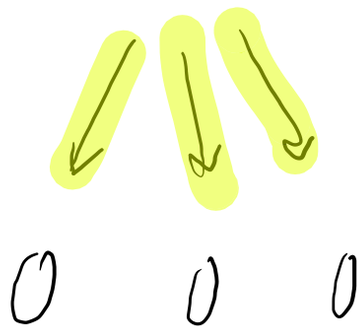
A' exclure



$$\frac{0}{-3} = -\frac{0}{3}$$

$$\frac{3}{0}$$

$$0$$



$$0 \quad 0 \quad 0$$

$$0 = 3 \cdot 0$$

$$\frac{0}{3} = 0$$

$$f(x) = \frac{x^2 + 2x - 5}{x^2 - 10x + 21}$$

(1) $E_D f$

(2) Zéros / Signe

$$x^2 - 10x + 21 \overset{?}{=} 0$$

$$x = \frac{10 \pm \sqrt{100 - 84}}{2} = \frac{10 \pm 4}{2}$$

- 7
- 3

$$D_f = \mathbb{R} - \{3, 7\}$$

ED_f ← Tous les nombres autorisés

A'enlever

$\mathbb{R} - \{\}$ ← Liste

Tous les nombre

Tous les nombres à' exclure

ETUDE COMPLÈTE

$f(x) = ax^2+bx+c$
$a \neq 0$

(1) $E_f = \mathbb{R}$

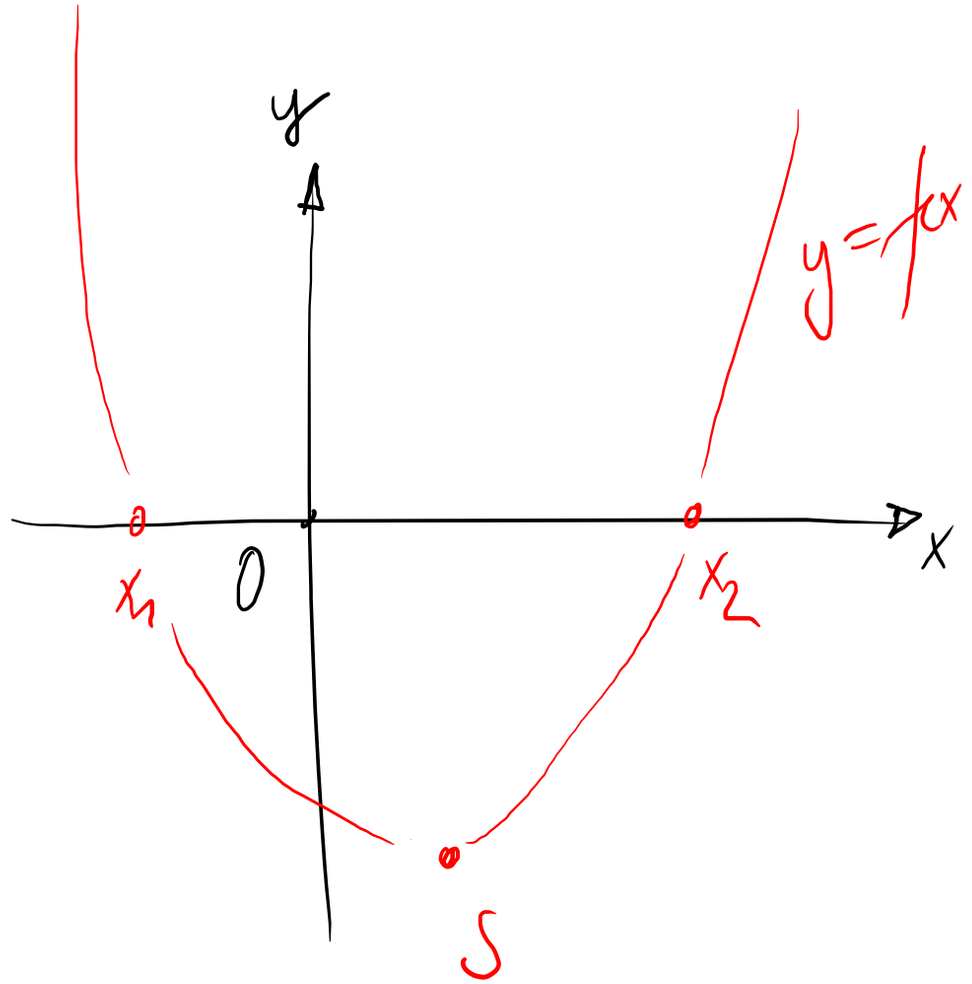
(2) Zéros / Sommet / Signe

$$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$$

x_1, x_2 si $\Delta > 0$

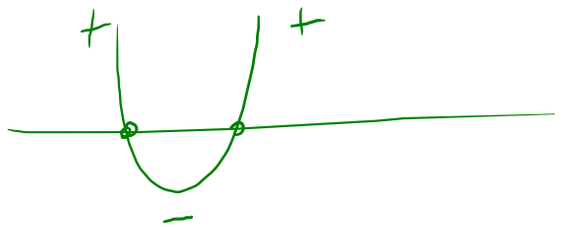
$$S\left(-\frac{b}{2a} ; a\cdot\left(-\frac{b}{2a}\right)^2 + b\cdot\left(-\frac{b}{2a}\right) + c\right)$$

	x_1		x_2	
	+	0	−	0 +



$f(x) = 3x^2 - 5x - 4$

$3 > 0$



① $\mathcal{D}_f = \mathcal{ED}_f = \mathbb{R}$

② Zéros / Sommet / Signe

$3x^2 - 5x - 4 = 0$

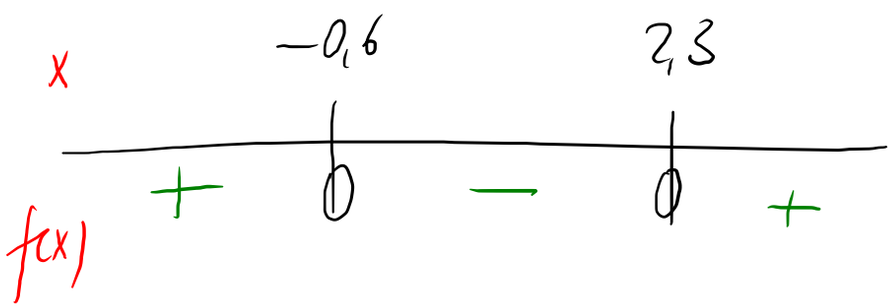
$\Delta = 25 + 48 = 73 > 0$

$x = \dfrac{5 \pm \sqrt{73}}{6}$ < $2{,}3$; $-0{,}6$

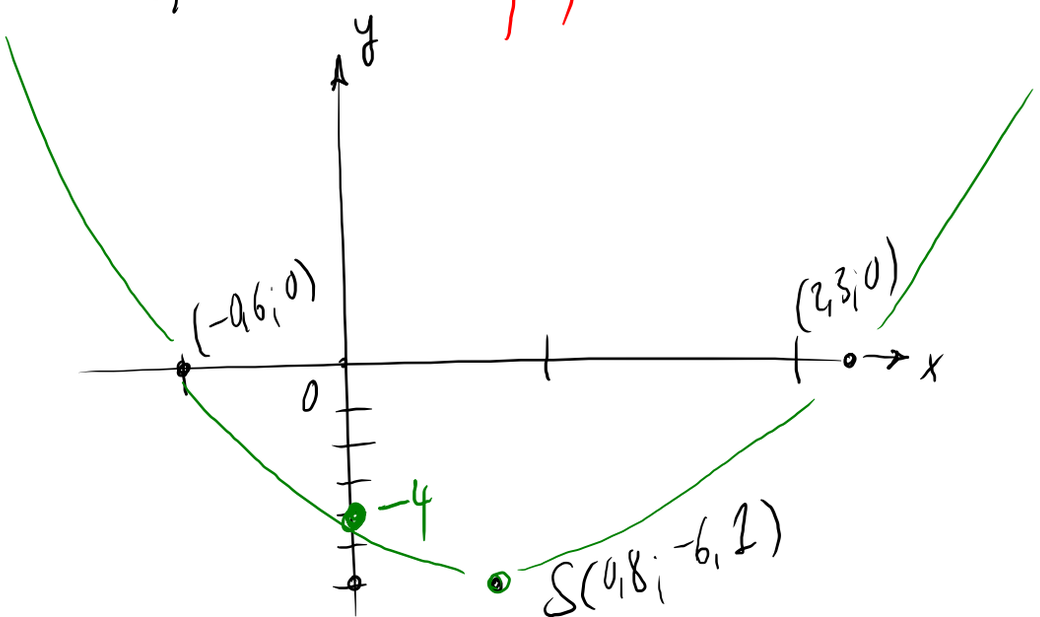
$S\left(\dfrac{5}{6}\,;\ 3\cdot\dfrac{25}{36} - \dfrac{25}{6} - 4\right)$

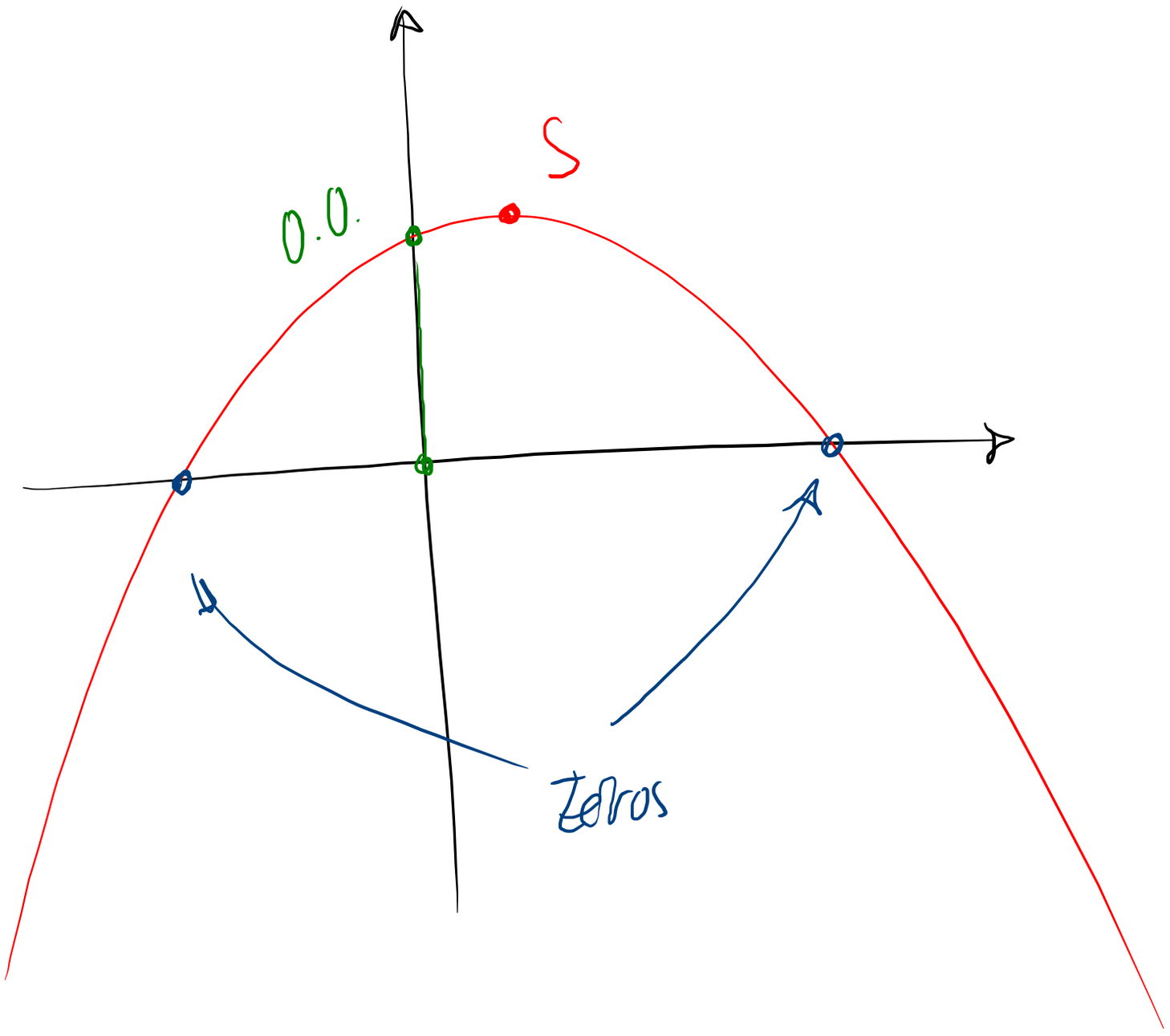
$-6{,}1$

$0{,}8$



③ Graphe




S
0.0.
Zeros

$$\frac{2+x}{x^2+9}$$

$x^2 \geq 0 \Rightarrow \underline{\underline{x^2+9 > 0}}$

$x^2+9=0$

$3^2+9=18$

$(-3)^2+9 = 9+9=18$

$x^2+9=0$

$x^2+0x+9=0$

$\Delta = 0^2 - 4 \cdot 9 = -36 < 0 \quad S=\emptyset$