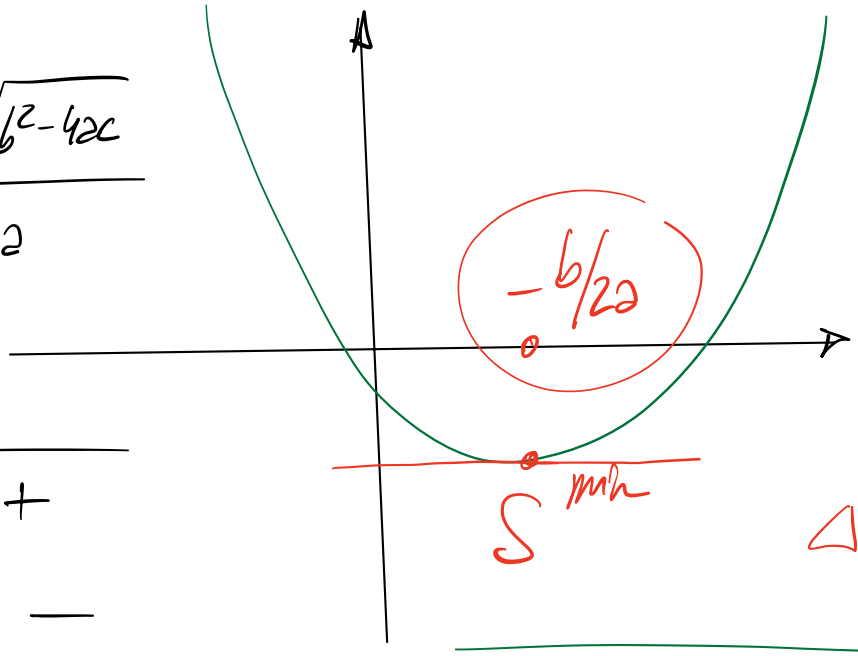
$f(x) = ax^2+bx+c$ $\qquad f: \mathbb{R} \to \mathbb{R}$

$D_f = \mathbb{R}$

zeros: $x = \dfrac{-b \pm \sqrt{b^2-4ac}}{2a}$



$\Delta = b^2-4ac$

signe:

	x_1		x_2	
+	0	−	0	+
−	0	+	0	−

$f'(x) = 2ax+b$

$f'(0): \; x = -\dfrac{b}{2a}$

$S\left(-\dfrac{b}{2a}\,;\,-\dfrac{\Delta}{4a}\right)$

$f\left(-\dfrac{b}{2a}\right) = a\dfrac{b^2}{4a^2} - \dfrac{b^2}{2a} + c$

$= \dfrac{ab^2-2ab^2+4a^2c}{4a^2}$

$= \dfrac{4ac-b^2}{4a} = -\dfrac{\Delta}{4a}$

Exemple: $f(x) = x^2 - 3x + 2$ $\quad -b/2a \quad -\Delta/4a$

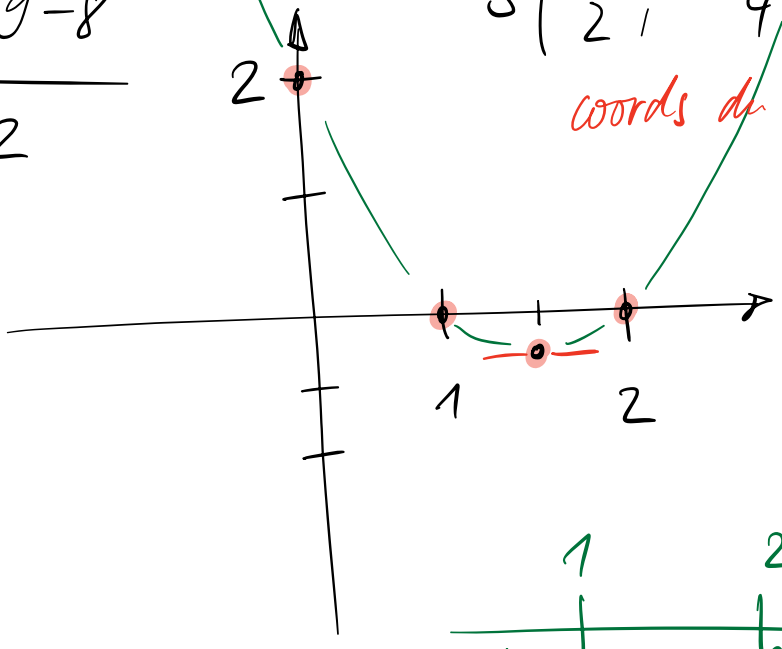
$S\left(\frac{3}{2}; -\frac{1}{4}\right)$ coords du sommet

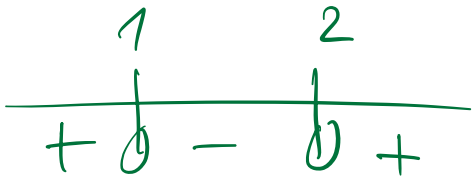
zéros : $x = \frac{3 \pm \sqrt{9-8}}{2}$

$x = \frac{3 \pm 1}{2}$

$x = 2$

$x = 1$

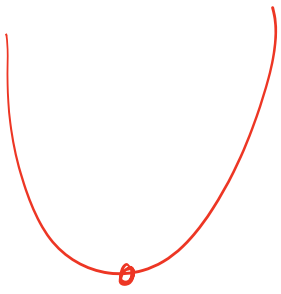




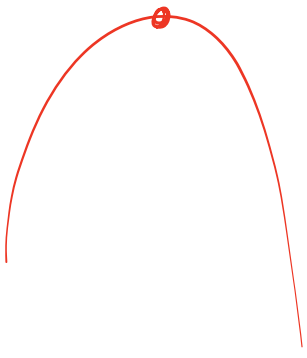
3.4.7 à 3.4.20

ax^2+bx+c

$a>0$



$a<0$



$x^2 - 4x$ $\quad \Delta = 16$

$$S\left(\frac{-(-4)}{2} ; -\frac{16}{4 \cdot 1}\right)$$

$$S(2; -8)$$