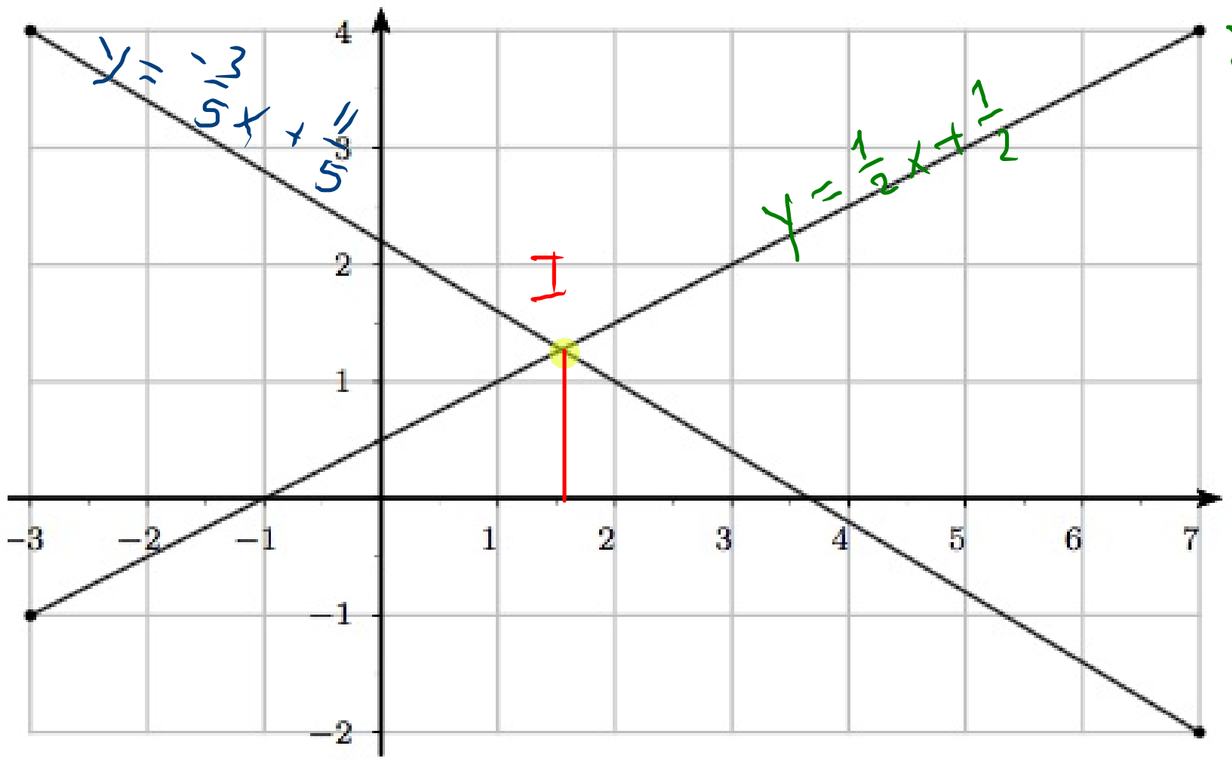
15.05.19

3.4.5



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

$4 = \frac{7}{2} + h \Rightarrow h = \frac{1}{2}$

$g(x) = -\frac{3}{5}x + h$

$-2 = -\frac{21}{5} + h$

$h = \frac{11}{5}$

a) Calculer les coordonnées du point d'intersection I des deux droites dessinées ci-dessus.

$$-\frac{3}{5}x + \frac{11}{5} = \frac{1}{2}x + \frac{1}{2} \quad \Big| \cdot 10$$

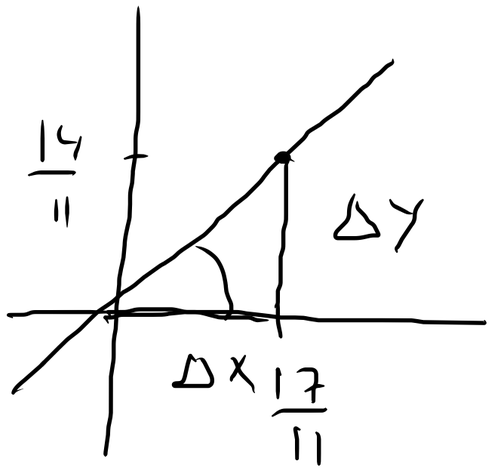
$$x = \frac{17}{11}$$

et donc $I\left(\frac{17}{11} ; \frac{14}{11}\right)$

b) Trouver la fonction f dont le graphe est une droite qui passe par l'origine et par le point I.

c) Trouver la fonction g dont le graphe est une droite parallèle au graphe de f et qui passe par le point $P(2; -1)$.

b) $h = 0$ $\qquad I\left(\frac{17}{11}; \frac{14}{11}\right)$



$$f(x) = \frac{14/11}{17/11}\,x = \frac{14}{17}\,x$$

c) $g(x) = \frac{14}{17}\,x + h$

$$-1 = \frac{14}{17}\cdot 2 + h \quad \Rightarrow \quad h = -\frac{45}{17}$$

Le signe de la fonction affine

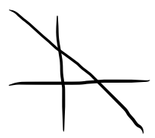
$f(x) = mx + h \qquad m \neq 0$

zéro de $f(x)$: $\quad mx + h = 0$

$$mx = -h$$

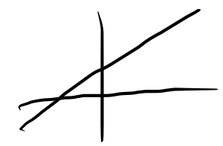
$$x = -\frac{h}{m}$$

$m < 0$



x		$-\frac{h}{m}$	
$f(x)$	$+$	0	$-$

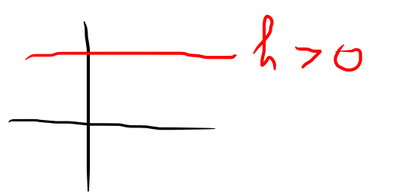
$m > 0$



x		$-\frac{h}{m}$	
$f(x)$	$-$	0	$+$

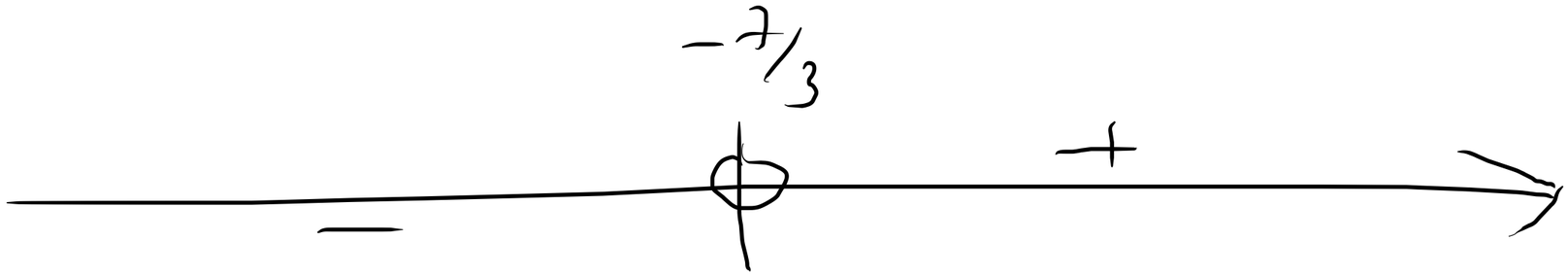
$m = 0, \; h \neq 0$

x	
$f(x)$	signe(h)



$3x + 7$

x		$-7/3$	
$3x+7$	$-$	0	$+$

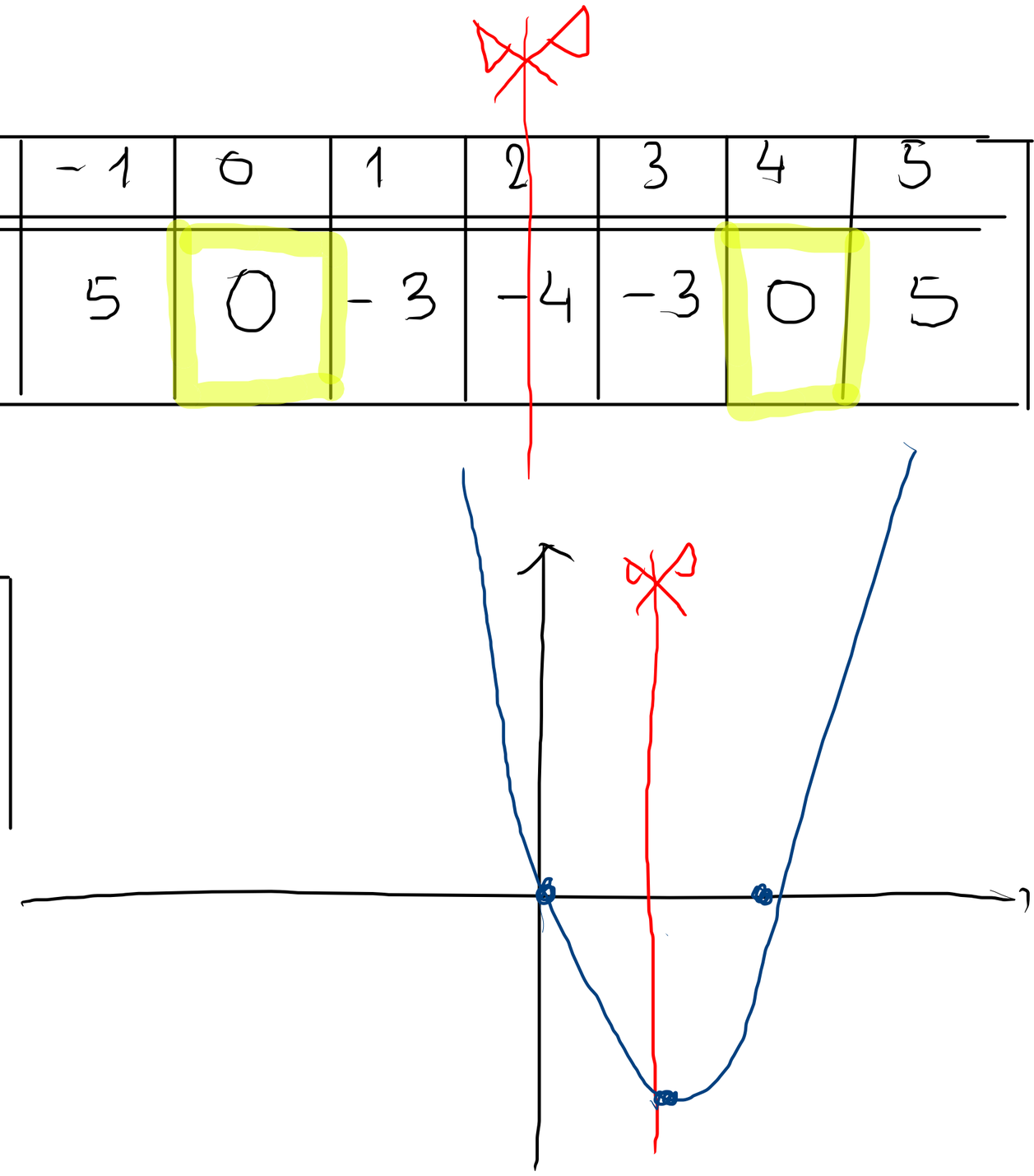


3.4.7 Dessiner les graphes des fonctions f suivantes

a) $f(x) = x^2 - 4\,x$

x	-5	-4	-3	-2	-1	0	1	2	3	4	5
$f(x)$	45	32	21	12	5	$\boxed{0}$	-3	-4	-3	$\boxed{0}$	5

x		0		4	
$f(x)$	$+$	0	$-$	0	$+$

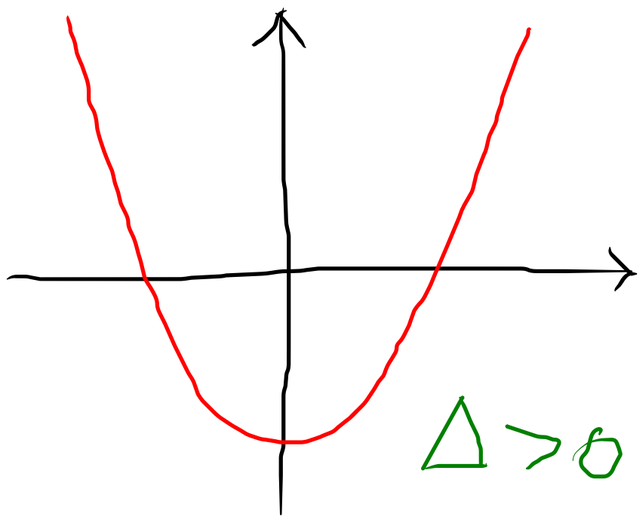


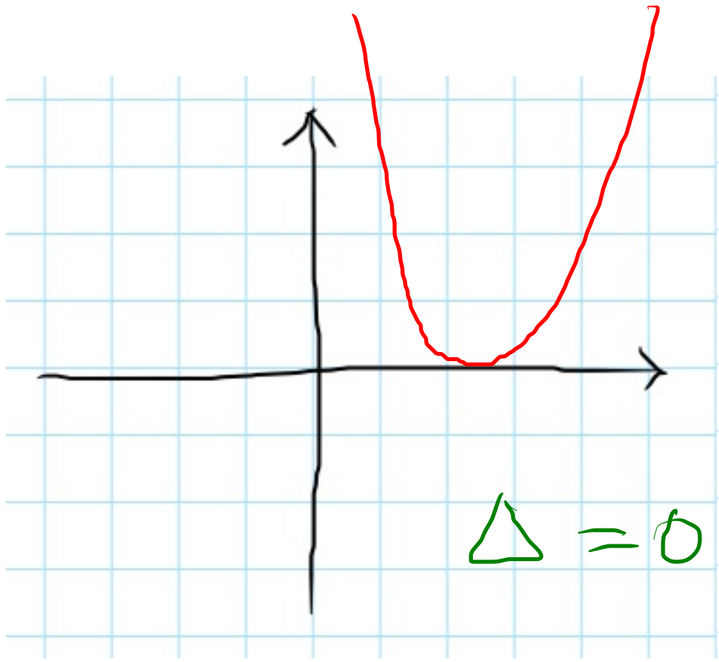
3.4.8 Etudier le signe des trinômes.

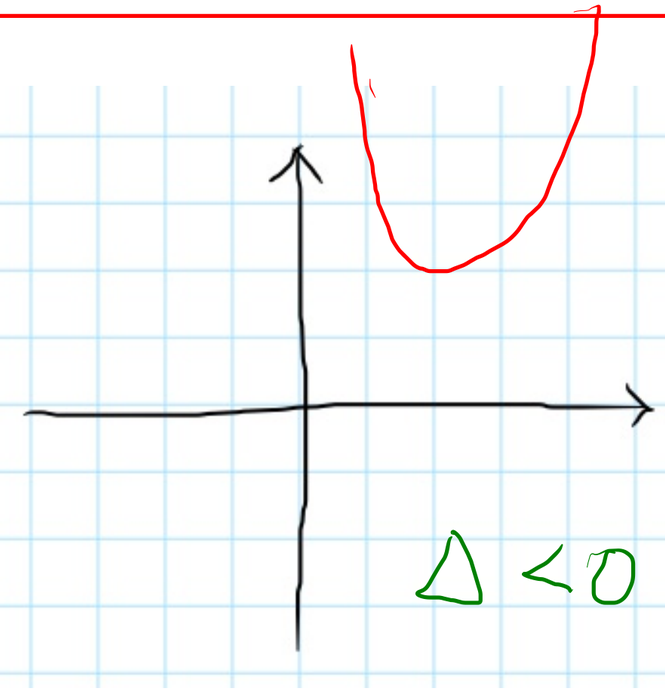
$f(x) = ax^2 + bx + c$

a) $6x^2 - x - 2$

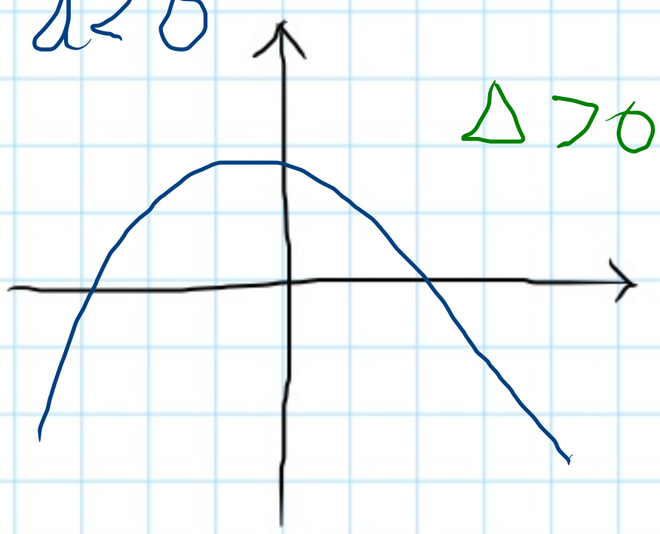
$a > 0$

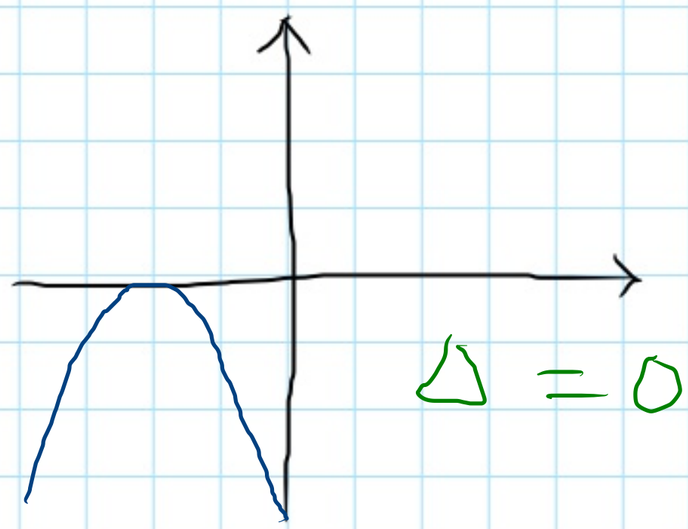


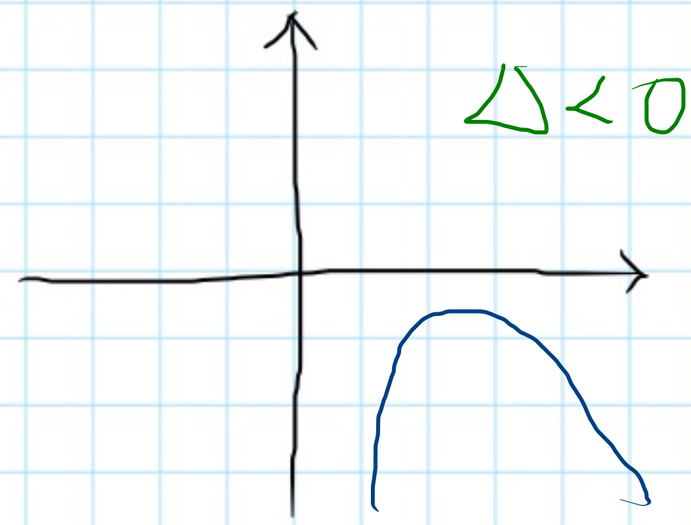




$a < 0$







Zéro de la fonction quadratique

$$\frac{-b \pm \sqrt{\Delta}}{2a}$$

Axe de symétrie

$$x = \frac{-b}{2a}$$

$$f(x) = 6x^2 - x - 2 \qquad a > 0,\ \Delta > 0$$

$$\Delta = 1 - 4 \cdot 6 \cdot (-2) = 49$$

x		$-1/2$		$2/3$	
$f(x)$	$+$	0	$-$	0	$+$

zéro: $\dfrac{+1 \pm 7}{12} = \begin{cases} 8/12 = 2/3 \\ -6/12 = -1/2 \end{cases}$

$$f(x) = 6x^2 - x - 2$$
$$= (3x - 2)(2x + 1)$$

$$\downarrow \qquad\qquad \downarrow$$
$$2/3 \qquad\qquad -1/2$$

x		$-1/2$		$2/3$	
$3x - 2$	$-$		$-$	0	$+$
$2x + 1$	$-$	0	$+$		$+$
$6x^2 - x - 2$	$+$	0	$-$	0	$+$