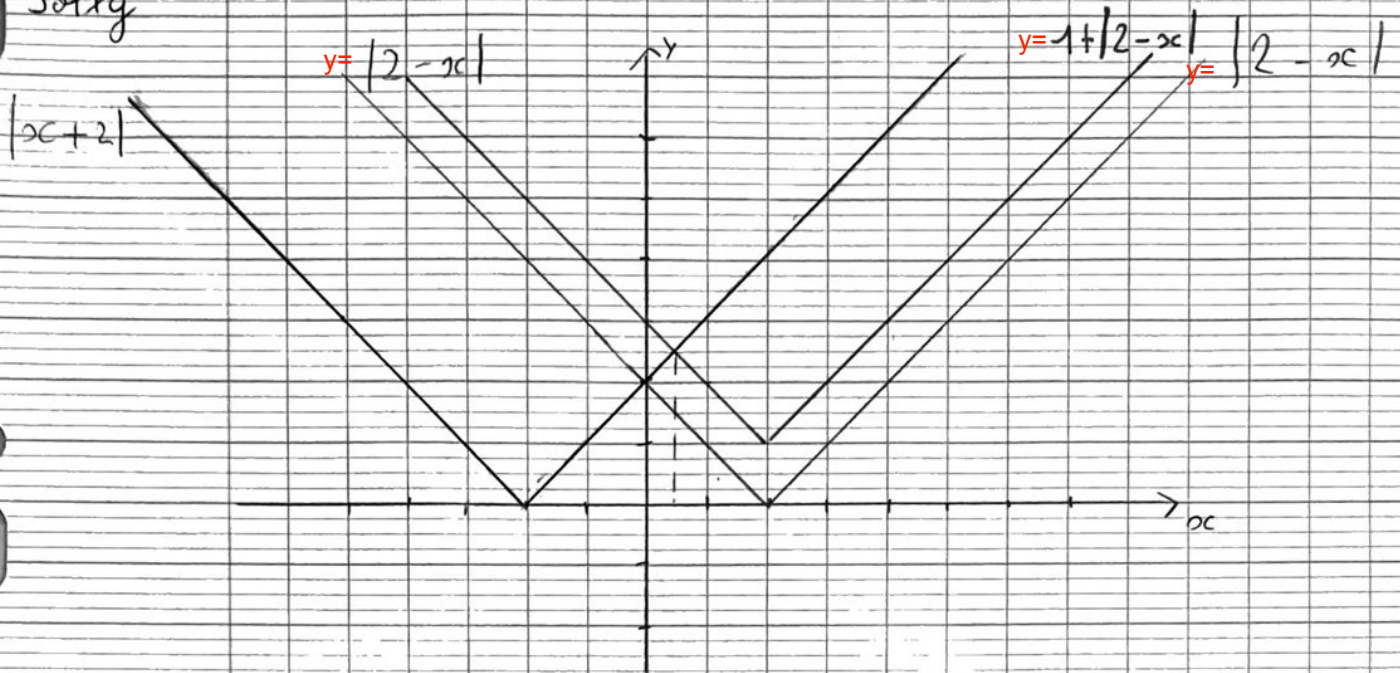


bours on  
Tolly

$$G_1: |x+2| = 1 + |2-x|$$



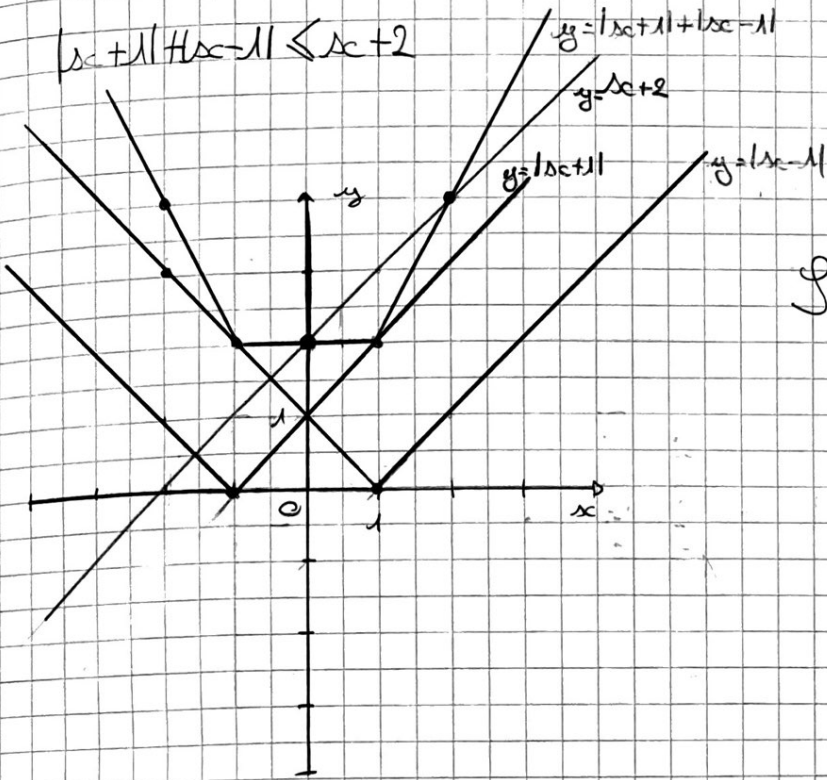
Graphiquement:  $S = \left\{ \frac{1}{2} \right\}$

$x+2=0 \Leftrightarrow x=-2$  et  $2-x=0 \Leftrightarrow x=2$

$x$	$-\infty$	$-2$	$2$	$+\infty$
$x+2$	—	⊖	+	+
$ x+2 $	$-x-2$	$x+2$	$x+2$	
$2-x$	+	+	⊖	—
$ 2-x $	$2-x$	$2-x$	$-2+x$	
$ x+2 =1+ 2-x $	borsque $x \leq -2$		borsque $x \in [-2, 2]$	borsque $x \geq 2$
	$ x+2 =1+ 2-x $		$ x+2 =1+ 2-x $	$ x+2 =1+ 2-x $
	$\Leftrightarrow -x-2=1+2-x$		$\Leftrightarrow x+2=1+2-x$	$\Leftrightarrow x+2=1-2+x$
	$\Leftrightarrow -2=3$		$\Leftrightarrow 2x=1$	$\Leftrightarrow 2=-1$
	$S_1 = \emptyset$		$S_2 = \left\{ \frac{1}{2} \right\}$	$S_3 = \emptyset$

$$S = S_1 \cup S_2 \cup S_3 = \left\{ \frac{1}{2} \right\}$$

$$|x+1| + |x-1| \leq x+2$$



$$S = [0; 2]$$

$x$	$-\infty$	$-1$	$1$	$+\infty$
$x+1$	—	0	+	+
$ x+1 $	$-x-1$		$x+1$	$x+1$
$x-1$	—		0	+
$ x-1 $	$-x+1$		$-x+1$	$x-1$

$$|x+1| + |x-1| \leq x+2$$

Lorsque  $x \leq -1$ :

$$|x+1| + |x-1| \leq x+2$$

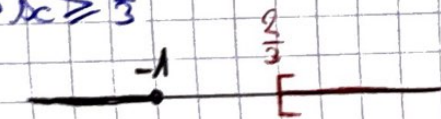
$$\Leftrightarrow -x-1 - x+1 \leq x+2$$

$$\Leftrightarrow -2x \leq x+2$$

$$\Leftrightarrow -2 \leq 3x$$

$$\Leftrightarrow \frac{-2}{3} \leq x$$

$$\Leftrightarrow x \geq \frac{-2}{3}$$



$$S_1 = \emptyset$$

Lorsque  $x \in [-1; 1]$

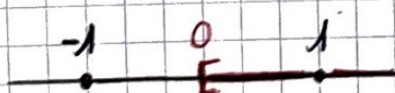
$$|x+1| + |x-1| \leq x+2$$

$$\Leftrightarrow x+1 - x+1 \leq x+2$$

$$\Leftrightarrow 2 \leq x+2$$

$$\Leftrightarrow 0 \leq x$$

$$\Leftrightarrow x \geq 0$$



$$S_2 = [0; 1]$$

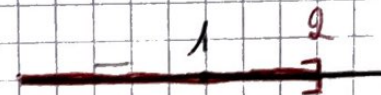
Lorsque  $x \geq 1$ :

$$|x+1| + |x-1| \leq x+2$$

$$x+1 + x-1 \leq x+2$$

$$\Leftrightarrow 2x \leq x+2$$

$$\Leftrightarrow x \leq 2$$



$$S_3 = [1; 2]$$

$$S = S_1 \cup S_2 \cup S_3 = [0; 2]$$

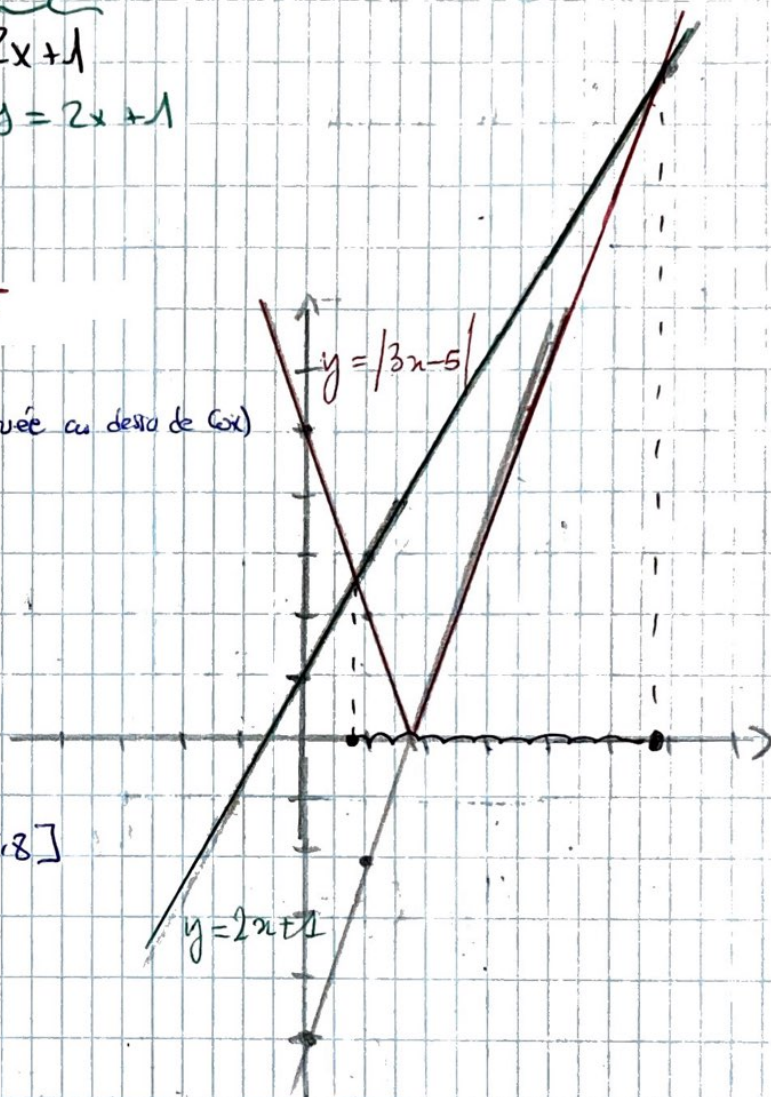
19-09-23

$$G.13 \Rightarrow \overbrace{|3x-5|} \leq \overbrace{2x+1}$$

$y = 3x - 5$                        $y = 2x + 1$

Graphiquement :

- ① Tracer  $y = 3x - 5$
- ② Tracer  $|3x - 5|$
- ③ Symétrie / cou de la partie située au-dessus de l'axe
- ④ Tracer  $y = 2x + 1$



Graphiquement, l'ensemble  
des solutions  $y = [0.8; 5.8]$

$$G3: \Rightarrow |3x-5| \leq 2x+1$$

Par le calcul:

$$3x-5=0 \Leftrightarrow 3x=5 \Leftrightarrow x=5/3$$

$$2x+1=0 \Leftrightarrow 2x=-1 \Leftrightarrow x=-1/2$$

x  $-\infty$

5/3

$+\infty$

$$3x-5$$

-

0

+

$$|3x-5|$$

$$-3x+5$$

$$3x-5$$

$$|3x-5| \leq 2x+1$$

lorsque  $x \leq 5/3$

$$|3x-5| \leq 2x+1 \Leftrightarrow -3x+5 \leq 2x+1$$

$$\Leftrightarrow 4 \leq 5x$$

$$\Leftrightarrow x \geq 4/5$$



$$S_1 = [4/5 ; 5/3]$$

lorsque  $x \geq 5/3$

$$|3x-5| \leq 2x+1 \Leftrightarrow 3x-5 \leq 2x+1$$

$$\Leftrightarrow x \leq 6$$

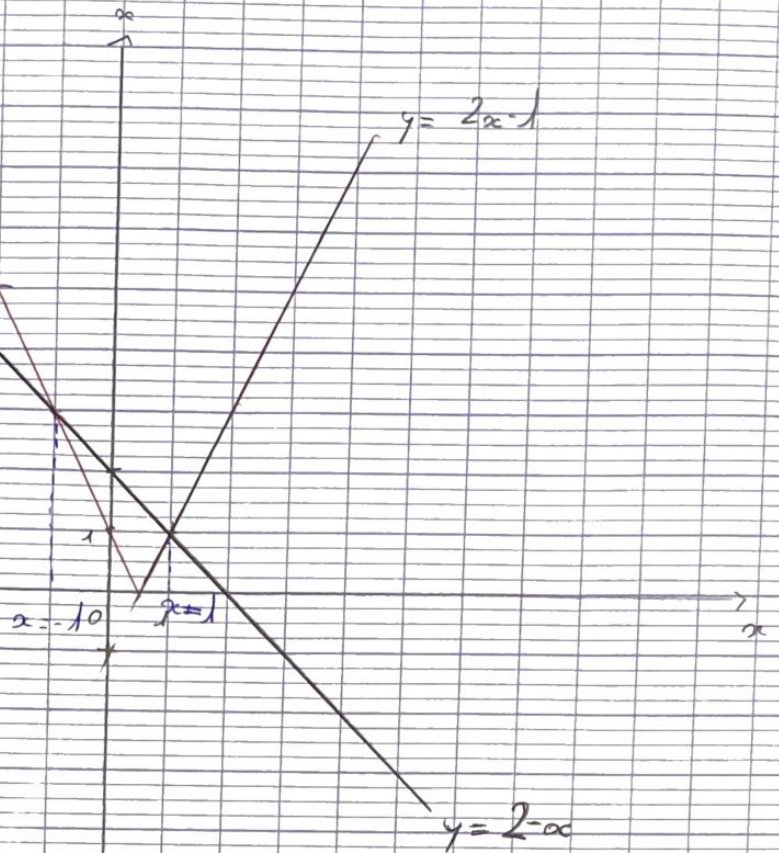


$$S_2 = [5/3 ; 6]$$

$$\text{Sol: } S = S_1 \cup S_2 = [4/5 ; 6]$$

G.4 Graph quadrant.

$$y = |2x - 1|$$



$$S = ]-1, 1[$$

$$|2x - 1| < 2 - x$$

$$2x - 1 = 0$$

$$2x = 1$$

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

$$2 - x = 0 \Leftrightarrow x = 2$$

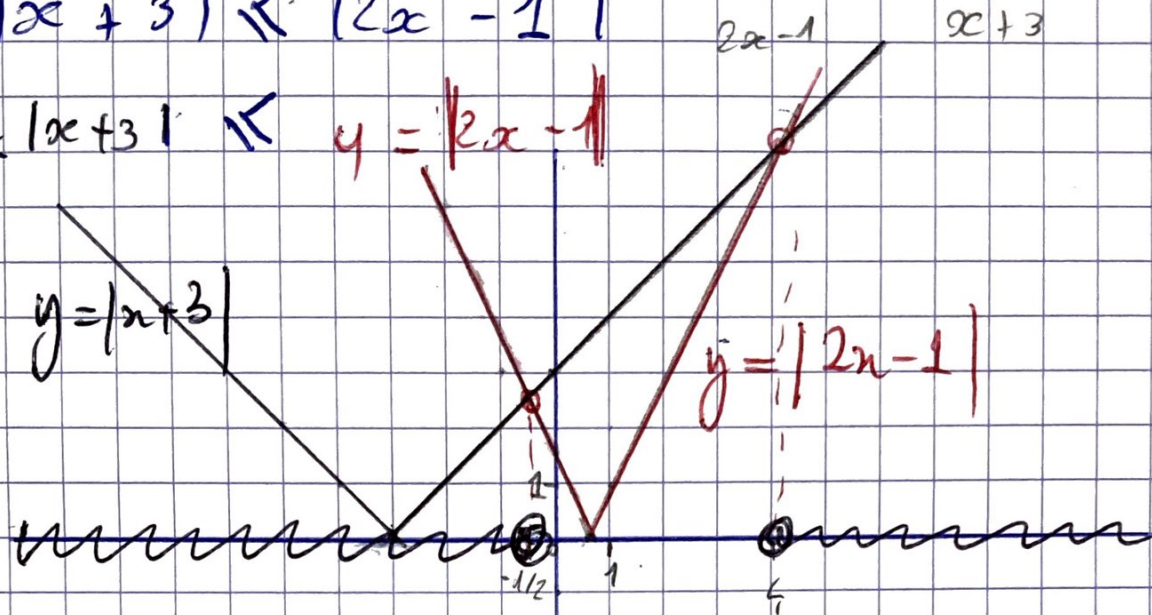
$x$	$-\infty$	$\frac{1}{2}$	$2$	$+\infty$
$2x - 1$		$\ominus$	$+$	$+$
$ 2x - 1 $	$-2x + 1$	$2x - 1$	$2x - 1$	
$2 - x$	$+$	$+$	$\ominus$	$-$
$ 2x - 1  < 2 - x$	lorsque $x \leq \frac{1}{2}$ $ 2x - 1  < 2 - x$ $-2x + 1 < 2 - x$ $\Leftrightarrow -1 < x$ $S = ]-1 ; \frac{1}{2}] \checkmark$	lorsque $x \in [\frac{1}{2} ; 2]$ ! $ 2x - 1  < 2 - x$ $2x - 1 < 2 - x$ $\Leftrightarrow x < 3$ $S = [\frac{1}{2} ; 2[$	lorsque $x \geq 2$ ! $ 2x - 1  < 2 - x$ $2x - 1 < 2 - x$ $\Leftrightarrow x < 1$ $S = \emptyset$	

$$S = ]-1 ; 1[$$

Resolut° graphique de  $|x+3| \leq |2x-1|$

$$|x+3| \leq |2x-1|$$

$$y = |x+3| \leq y = |2x-1|$$



Graphiquement


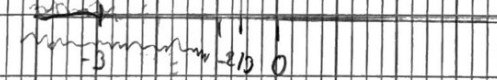

$$S: ]-\infty; -1/2] \cup [4; +\infty[$$



Resolut° par le calcul:  $|x+3| \leq |2x-1|$

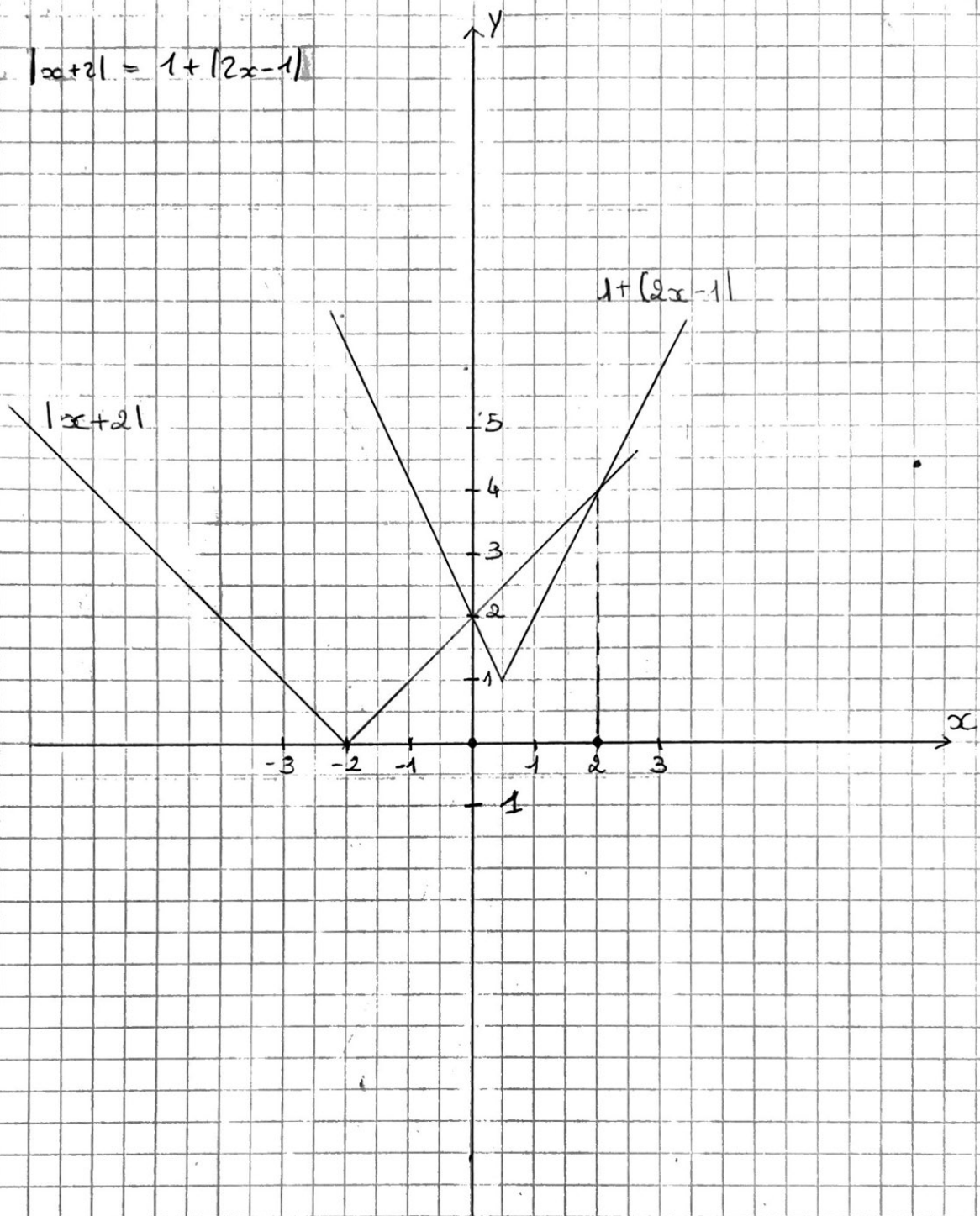
$$x+3=0 \Leftrightarrow x=-3$$

$$2x-1=0 \Leftrightarrow x=1/2$$

$x$	$-\infty$	$-3$	$1/2$	$+\infty$
$x+3$	$x+3$	0		
$ x+3 $	$-x-3$		$x+3$	$x+3$
$2x-1$			0	
$ 2x-1 $	$-2x+1$	$-2x+1$		$2x-1$
$ x+3  \leq  2x-1 $	lorsque $x \leq -3$	lorsque $x \in [-3, 1/2]$	lorsque $x > 1/2$	
(E)	$(E) \Leftrightarrow -x-3 \leq -2x+1 \Leftrightarrow x \leq 4$	$(E) \Leftrightarrow x+3 \leq -2x+1$ $\Leftrightarrow x \leq -2x-2$ $\Leftrightarrow 3x \leq -2$ $\Leftrightarrow x \leq -2/3$	$(E) \Leftrightarrow x+3 \leq 2x-1$ $\Leftrightarrow x \leq 2x-4$ $\Leftrightarrow -x \leq -4$ $\Leftrightarrow x \geq 4$	
				
	$S_1 = ]-\infty; 4]$	$S_2 = [-3; -2/3]$	$S_3 = [4; +\infty[$	

$$S = S_1 \cup S_2 \cup S_3 = ]-\infty; -2/3] \cup [1/4; +\infty[$$

$$|x+2| = 1 + |2x-1|$$



$$S = \{0, -2\}$$

$x$	$-\infty$	$-2$	$\frac{1}{2}$	$+\infty$
$x+2$	-	0	+	+
$ x+2 $	$-x-2$	$x+2$	$x+2$	$x+2$
$2x-1$	-	-	0	+
$ 2x-1 $	$-2x+1$	$-2x+1$	$2x-1$	$2x-1$
$ x+2  = 1 +  2x-1 $	Lorsque $x \leq -2$ : $ x+2  = 1 +  2x-1 $ $\Leftrightarrow -x-2 = 1-2x+1$ $\Leftrightarrow -x+2x = 2+1+1$ $\Leftrightarrow x = 4$ $S_1 = \emptyset$	Lorsque $x \in [-2, \frac{1}{2}]$ : $ x+2  = 1 +  2x-1 $ $\Leftrightarrow x+2 = 1-2x+1$ $\Leftrightarrow x+2x = 1-2+1$ $\Leftrightarrow 3x = 0$ $\Leftrightarrow x = 0$ $S_2 = \{0\}$	Lorsque $x \geq \frac{1}{2}$ : $ x+2  = 1 +  2x-1 $ $\Leftrightarrow x+2 = 1+2x-1$ $\Leftrightarrow x-2x = 1-1-2$ $\Leftrightarrow -x = -2$ $\Leftrightarrow x = 2$ $S_3 = \{2\}$	

$$S = S_1 \cup S_2 \cup S_3$$

$$S = \{0, 2\}$$

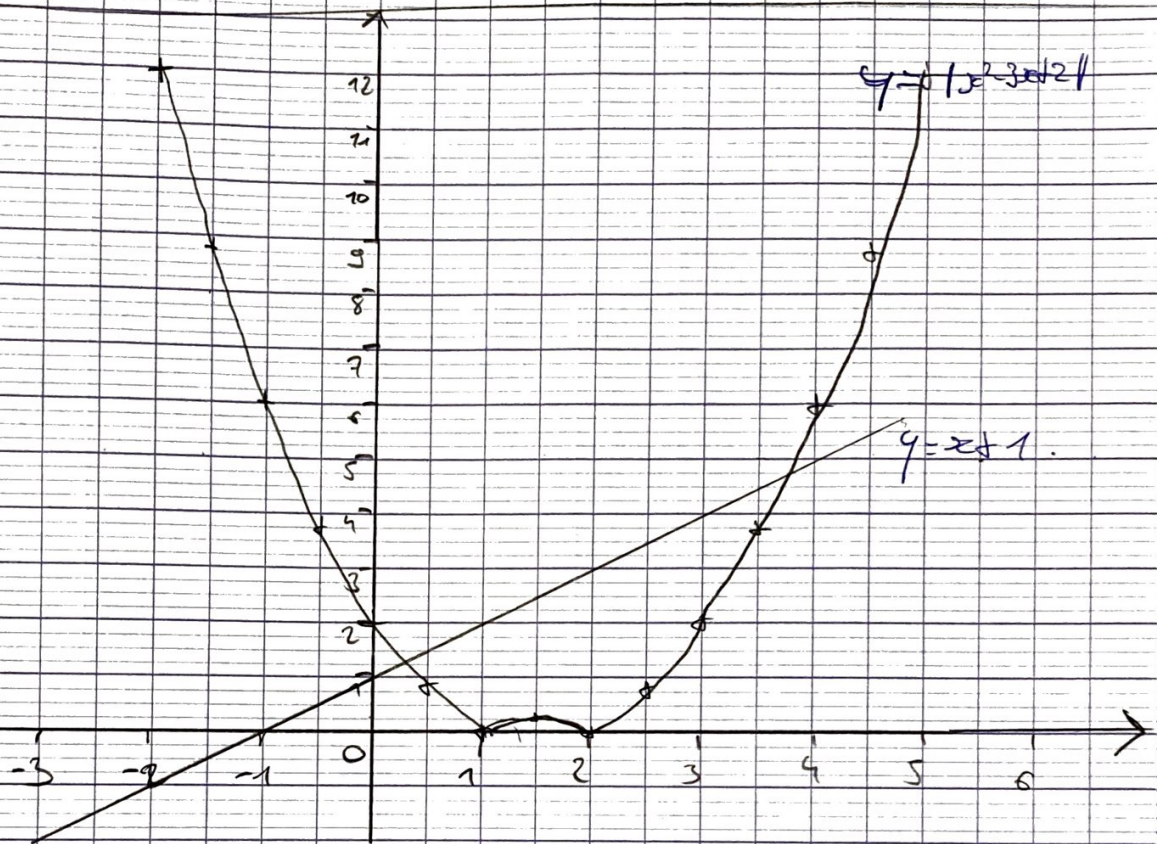
$$\Delta = b^2 - 4ac$$

$$= 9 - 8$$

$$\Delta = 1$$

$$x_1 = \frac{-b - \sqrt{\Delta}}{2a} = \frac{+3 - 1}{2} = 1$$

$$x_2 = \frac{-b + \sqrt{\Delta}}{2a} = \frac{4}{2} = 2$$



$$S_a [0, 25; 3, 75]$$

$$x_1 = 1$$

$$x_2 = 2$$

$x$	$-\infty$		1		2		$-\infty$
$x^2 - 3x + 2$		+	0	-	0	+	
$ x^2 - 3x + 2 $	$x^2 - 3x + 2$		$-x^2 + 3x - 2$		$x^2 - 3x + 2$		

$|x^2 - 3x + 2| \leq x + 1$  Casque  $x \leq 1$ :

$$x^2 - 3x + 2 \leq x + 1 \Leftrightarrow x^2 - 4x + 1 \leq 0$$

$$\Delta = b^2 - 4ac$$

$$\Delta = 16 - 4$$

$$\Delta = 12$$

$$x_1 = \frac{-b - \sqrt{\Delta}}{2a} = \frac{4 - 2\sqrt{3}}{2} = 2 - \sqrt{3}$$

$$x_2 = \frac{-b + \sqrt{\Delta}}{2a} = \frac{4 + 2\sqrt{3}}{2} = 2 + \sqrt{3}$$

$$x_2 = 2 + \sqrt{3}$$

Casque  $x \in [1, 2]$ :

$$-x^2 + 3x - 2 \leq x + 1 \Leftrightarrow -x^2 + 2x - 3 \leq 0 \Leftrightarrow x^2 - 2x + 3 \geq 0$$

$$\Delta = b^2 - 4ac$$

$$\Delta = 4 - 12$$

$$\Delta = -8 < 0$$

Casque  $x \geq 2$ :

$$x^2 - 3x + 2 \leq x + 1$$

$$x^2 - 4x + 1 \leq 0 \Leftrightarrow$$

$$\Delta = b^2 - 4ac$$

$$\Delta = 12$$

$$x_1 = 2 - \sqrt{3}$$

$$x_2 = 2 + \sqrt{3}$$

$x$	$-\infty$	$2 - \sqrt{3}$	$2 + \sqrt{3}$	$+\infty$	
$x^2 - 4x + 1$	+	0	-	0	+

$$S_1 = [2 - \sqrt{3}, 1]$$

$x$	$-\infty$	$+\infty$
$-x^2 + 2x - 3$		-

$$S_2 = [1, 2]$$

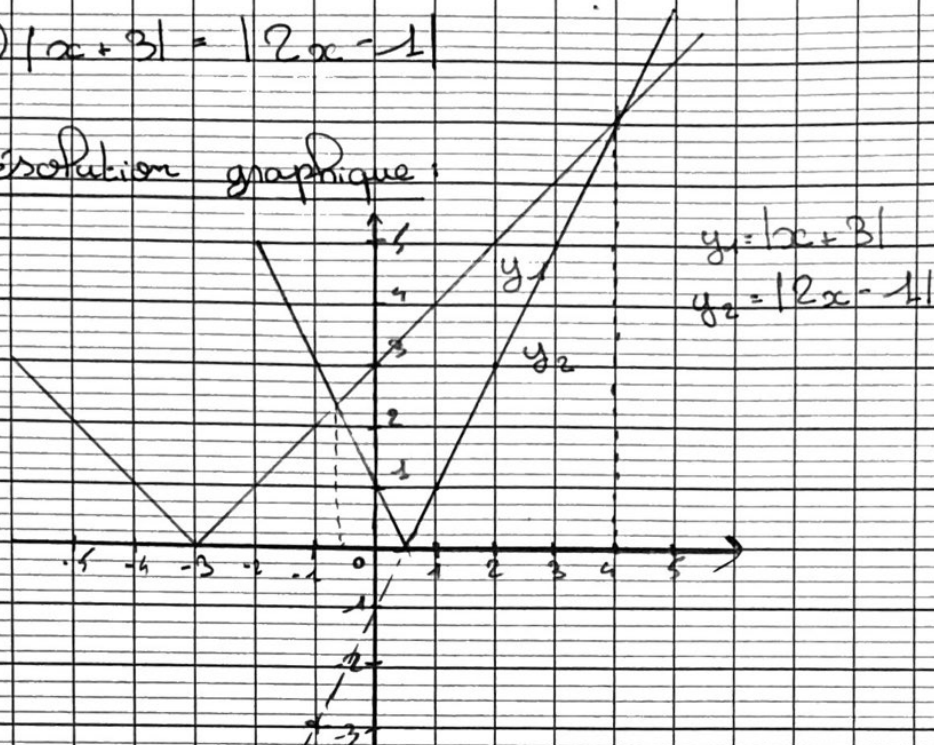
$x$	$-\infty$	$2 - \sqrt{3}$	$2 + \sqrt{3}$	$+\infty$	
$x^2 - 4x + 1$	+	0	-	0	+

$$S_3 = [2, 2 + \sqrt{3}]$$

$$S = S_1 \cup S_2 \cup S_3 = [2 - \sqrt{3}, 2 + \sqrt{3}]$$

$$\textcircled{6} |x+3| = |2x-1|$$

Résolution graphique :



Graphiquement  $S = \left\{ -\frac{1}{2}; 4 \right\}$

Résolution par le calcul:

$$|x+3| = |2x-1| \Leftrightarrow x+3=0$$

$$\Leftrightarrow x = -3$$

$$2x-1=0$$

$$\Leftrightarrow 2x = 1$$

$$\Leftrightarrow x = \frac{1}{2}$$

$x$	$-\infty$	$-3$	$\frac{1}{2}$	$+\infty$
$x+3$	-	0	+	+
$ x+3 $	$-x-3$	-	$x+3$	$x+3$
$2x-1$	-	0	+	+
$ 2x-1 $	$-2x+1$	$-2x+1$	$2x-1$	$2x-1$

Lorsque  $x \leq -3$

$$|x+3| = |2x-1|$$

$$\Leftrightarrow -x-3 = -2x+1$$

$$\Leftrightarrow x = 4$$

$$\mathcal{P}_1 = \emptyset$$

Lorsque  $x \in [-3; \frac{1}{2}]$

$$|x+3| = |2x-1|$$

$$\Leftrightarrow x+3 = -2x+1$$

$$\Leftrightarrow 3x = -2$$

$$\Leftrightarrow x = -\frac{2}{3}$$

$$\mathcal{P}_2 = \left\{-\frac{2}{3}\right\}$$

Lorsque  $x \gg \frac{1}{2}$

$$|x+3| = |2x-1|$$

$$\Leftrightarrow x+3 = 2x-1$$

$$\Leftrightarrow x = 4$$

$$\mathcal{P}_3 = \{4\}$$

$$\mathcal{I} = \left[-\frac{2}{3}; 4\right]$$