

Inéquations

$$\rightarrow x^2 > a$$

$$|x| > \sqrt{a}$$

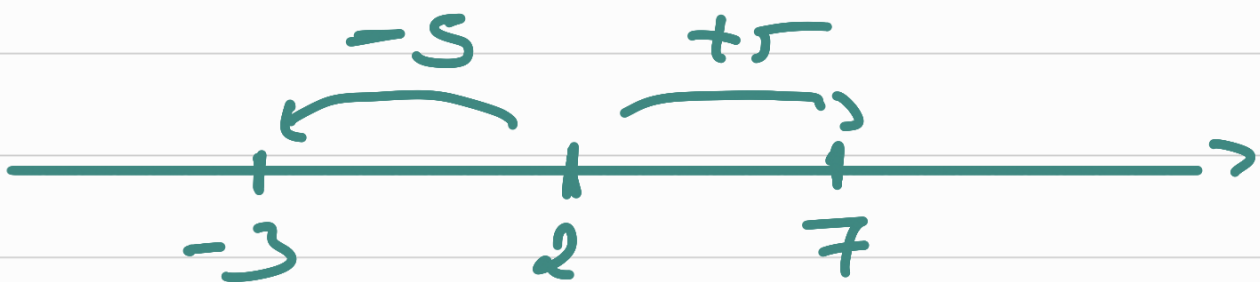
$$x > \sqrt{a} \quad \text{ou} \quad x \leq -\sqrt{a}$$

$$|x - a| = b$$

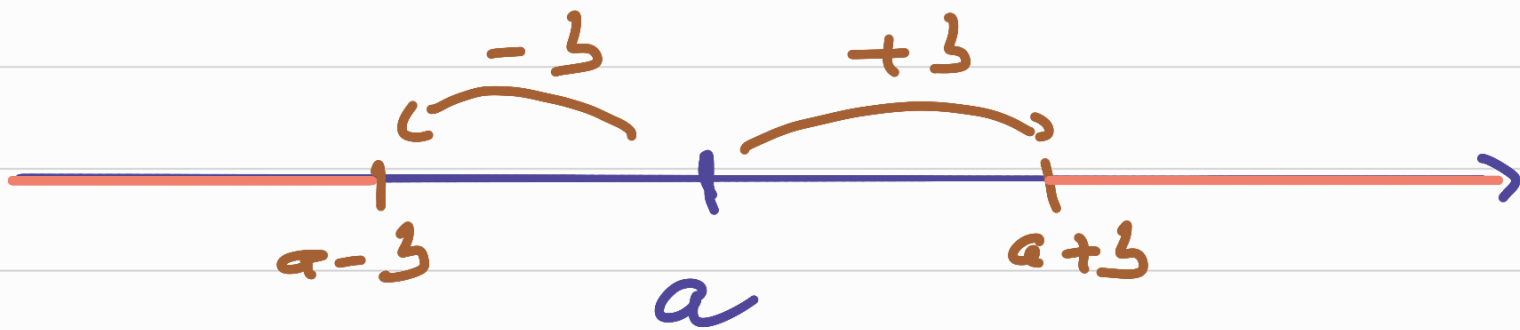
e, distance entre x et a



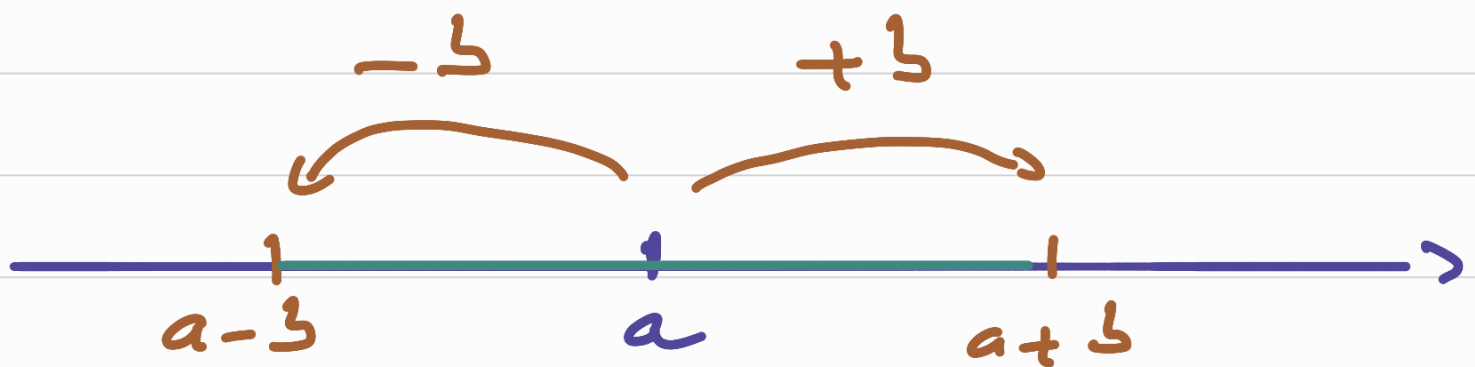
exemple: $|x - 2| = 5$



$$|x - a| \geq b$$



$$|x - a| \leq b$$



$$\rightarrow x^2 \leq a$$

$$|x| \leq \sqrt{a}$$

$$-\sqrt{a} \leq x \leq \sqrt{a}$$

exercice :

$$\bullet \quad x^2 \leq 5$$

$$\Leftrightarrow -\sqrt{5} \leq x \leq \sqrt{5}$$

$$\text{donc } \mathcal{D} = [-\sqrt{5}; \sqrt{5}]$$

$$\bullet \quad x^2 > 36$$

$$\Leftrightarrow x < -\sqrt{36} \quad \text{ou} \quad x > \sqrt{36}$$

$$\Leftrightarrow x < -6 \quad \underline{\text{ou}} \quad x > 6$$

$$\text{donc } \mathcal{D} =]-\infty; -6[\cup]6; +\infty[.$$

$$\bullet \quad x^2 \geq 121$$

$$\mathcal{D} =]-\infty; -11] \cup [11; +\infty[$$

$$\bullet \quad x^2 < 169.$$

$$\mathcal{D} =]-13; 13[.$$

$$\bullet (2x - 1)(6 - x) > \underline{\underline{0}}$$

$$2x - 1 > 0$$

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

$$6 - x > 0$$

$$-x > -6$$

$$x \leq \underline{\underline{-1}} = 6$$

x	$-\infty$	$\frac{1}{2}$	6	$+\infty$
$2x - 1$	$-$	0	$+$	
$6 - x$		$+$	0	$-$
$(2x - 1)(6 - x)$	$-$	0	$+$	0
done	$\Rightarrow =] \frac{1}{2} ; 6 [$			

$$\bullet (2x+3)(3-5x) \leq 0$$

$$2x+3 \leq 0$$

$$3-5x \leq 0$$

$$2x \leq -3$$

$$-5x \leq -3$$

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

$$x \geq \frac{-3}{-5} = \frac{3}{5}$$

x	$-\infty$	$-\frac{3}{2}$	$\frac{3}{5}$	$+\infty$
$2x+3$	—	$\emptyset$	+	
$3-5x$		+	$\emptyset$	—
$(2x+3)(3-5x)$	—	$\emptyset$	$\emptyset$	—

$$\text{donc } \mathcal{S} =]-\infty; -\frac{3}{2}] \cup [\frac{3}{5}; +\infty[$$

$$\bullet (-x + 7)(x + 3) \geq 0.$$

$$-x + 7 \geq 0$$

$$x + 3 \geq 0$$

$$= x \geq -7$$

$$x \geq -3$$

$$x \leq \frac{-7}{-1} = 7$$

x	$-\infty$	-3	7	$+\infty$
$-x + 7$		+	0	-
$x + 3$	-	0	+	
$(-x + 7)(x + 3)$	-	0+	0-	-

$$\Delta = [-3; 7].$$

$$\bullet \frac{3x+1}{x-1} > 0$$

$x-1 \neq 0$

$$3x+1 > 0$$

$$3x > -1$$

$$x > -\frac{1}{3}$$

$$x-1 > 0$$

$$x > 1$$

x	$-\infty$	$-\frac{1}{3}$	1	$+\infty$
$3x+1$	$-$	$\emptyset$	$+$	
$x-1$		$-$	$\emptyset$	$+$
$\frac{3x+1}{x-1}$	$+$	$\emptyset$	$-$	$+$

$\hookrightarrow$ values interdites

donc

$$\mathcal{D} =]-\infty; -\frac{1}{3}[\cup]1; +\infty[$$

$$\cdot \frac{4x - 1}{2 - x} \leq 0$$

$$4x - 1 \leq 0$$

$$4x \leq 1$$

$$x \leq \frac{1}{4}$$

$$2 - x \leq 0$$

$$-x \leq -2$$

$$x \geq 2$$

x	$-\infty$	$\frac{1}{4}$	2	$+\infty$
$4x - 1$	$-$	0	$+$	
$2 - x$		$+$	0	$-$
$\frac{4x - 1}{2 - x}$	$-$	0	$+$	$-$

$$\Delta =]-\infty; \frac{1}{4}] \cup [2; +\infty[.$$

$$\bullet \quad \frac{5 + 2x}{4x + 1} \leq 0$$

$$5 + 2x \geq 0$$

$$2x \geq -5$$

$$x \geq -\frac{5}{2}$$

$$4x + 1 > 0$$

$$4x > -1$$

$$x > -\frac{1}{4}$$

x	$-\infty$	$-\frac{5}{2}$	$-\frac{1}{4}$	$+\infty$
$5 + 2x$	$-$	$\bigcirc$	$+$	
$4x + 1$		$-$	$\bigcirc$	$+$
$\frac{5 + 2x}{4x + 1}$	$+$	$\bigcirc$	$-$	$+$

done $\mathcal{D} = \left[-\frac{5}{2}, -\frac{1}{4}\right]$.

