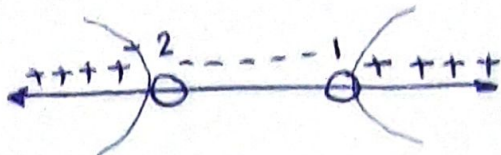


Ex<sub>1</sub> <sup>2</sup> <sup>كافيه</sup> (Inequality) عن الـ الثاني

$$x^2 + x - 2 > 0$$

$$(x + 2)(x - 1)$$



$$S = (-\infty, -2) \cup (1, \infty)$$

$$x + 2 = 0 \text{ اذا}$$

$$\boxed{x = -2}$$

$$\text{or } x - 1 = 0$$

$$\boxed{x = 1}$$

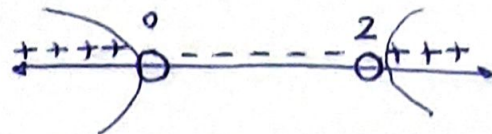
ملاحظ / لمعرفة الإشارات فقط  
لا نحتاج في حالة المتباينة من الـ الثاني  
فإن  
شأنه ما بين الجذور تكون مخالفة للإشارة  $x^2$   
أما الأطراف فتكوناً مشابهة لـ  $x^2$

Ex<sub>2</sub>  $x^2 - 2x > 0$

$$x(x - 2) > 0$$

$$\boxed{x = 0}$$

$$\text{or } \boxed{x = 2}$$



$$S = (-\infty, 0) \cup (2, \infty)$$

Ex<sub>3</sub>  $x^2 - 7x + 12 \leq 0$

$$(x - 4)(x - 3)$$

$$\boxed{x = 4}$$

$$\boxed{x = 3}$$



$$S = [3, 4]$$

$$\underline{\underline{Ex_4}} \quad x^2 + x > 30$$

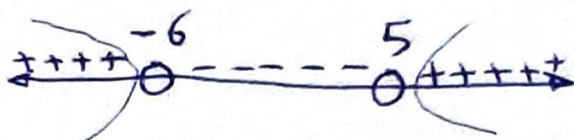
$$\Rightarrow x^2 + x - 30 > 30 - 30$$

$$\Rightarrow x^2 + x - 30 > 0$$

$$\Rightarrow (x + 6)(x - 5) > 0$$

$$\boxed{x = -6}$$

$$\boxed{x = 5}$$



$$S = (-\infty, -6) \cup (5, \infty)$$

~~~~~

$$\underline{\underline{Ex_5}} \quad x^2 \geq 1$$

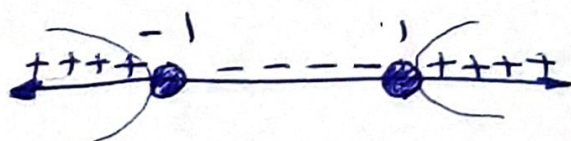
$$\Rightarrow x^2 - 1 \geq 1 - 1$$

$$\Rightarrow x^2 - 1 \geq 0$$

$$\Rightarrow (x - 1)(x + 1) \geq 0$$

$$\boxed{x = 1}$$

$$\boxed{x = -1}$$



$$S = (-\infty, -1] \cup [1, \infty)$$



Ex 6  $21 + 4x - x^2 > 0$

$\Rightarrow 21 + 4x - x^2 > 0 \quad * [-1]$

$\Rightarrow x^2 - 4x - 21 < 0$

$(x - 7)(x + 3)$

$x = 7$

$x = -3$



$S = (-3, 7)$

Ex 7  $2x^2 - 7x + 3 < 0$   
 $(2x - 1)(x - 3)$

$2x = 1$

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

$x = 3$

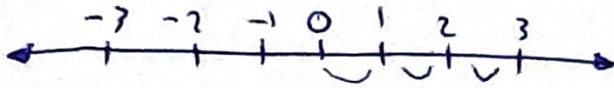


$S = (\frac{1}{2}, 3)$

# Absolute value القيمة المطلقة

$$|2| = 2, \quad |-4| = 4, \quad |\mp 99| = 99$$

القيمة المطلقة تعني المسافة



$$|-3| = 3, \quad |3| = 3$$

بعض خواص القيمة المطلقة

$$a, b \in \mathbb{R}$$

$$\textcircled{1} \quad |\mp a| = a$$

$$\textcircled{2} \quad |a \cdot b| = |a| \cdot |b|$$

$$\textcircled{3} \quad \left| \frac{a}{b} \right| = \frac{|a|}{|b|}$$

$$\textcircled{4} \quad |a + b| \leq |a| + |b|$$

تعريف، رياضياً بسيطاً

$$|x| = \begin{cases} x, & x \geq 0 \\ -x, & x < 0 \end{cases}$$

$$\underline{\underline{Ex}}, |x-1| = 3$$

$$\boxed{1} \quad x \geq 1$$

$$x-1 = 3$$

$$x = 4 \checkmark$$

$$|x-1| = \begin{cases} x-1, & x \geq 1 \\ -(x-1), & x < 1 \end{cases}$$

$$x-1 = 0$$

$$\boxed{x = 1}$$

$$\boxed{2} \quad x < 1$$

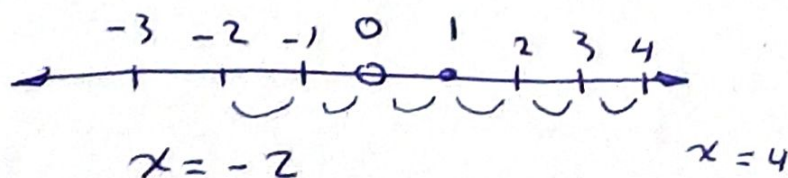
$$-x+1 = 3$$

$$-x = 2$$

$$x = -2 \checkmark$$

$$\therefore S = \{-2, 4\}$$

المعلوم الهندسية فقط / بما انه المطلق هو المسار نفوس  
في خط الأعداد





$$\underline{\underline{\text{Ex } 2}} \quad 2|x+2|=10 \quad ] \div 2$$

$$|x+2|=5$$

$$|x+2|= \begin{cases} x+2, & x \geq -2 \\ -(x+2), & x < -2 \end{cases}$$

$$\boxed{1} \quad x \geq -2$$

$$x+2=5$$

$$x = -2 + 5$$

$$\boxed{x=3} \quad \checkmark$$

$$x+2=0$$

$$\boxed{x=-2}$$

$$\boxed{2} \quad x < -2$$

$$-(x+2)=5$$

$$-x = 5 + 2$$

$$\boxed{x=-7} \quad \checkmark$$

$$S = \{3, -7\}$$

Ex 3  $x^2 - |x| = 12$

$$|x| = \begin{cases} x, & x \geq 0 \\ -x, & x < 0 \end{cases}$$

[1]  $x \geq 0$

$$x^2 - x = 12$$

$$x^2 - x - 12 = 0$$

$$(x - 4)(x + 3)$$

$\therefore$   $\boxed{x = 4}$  or  $x = -3$  *check*

[2]  $x < 0$   
 $x^2 - (-x) = 12$

$$x^2 + x - 12 = 0$$

$$(x + 4)(x - 3)$$

$\boxed{x = -4}$  or  $x = 3$  *check*

$$S = \{-4, 4\}$$



$$\underline{\underline{Ex 4}} \quad \frac{4-x^2}{|2-x|} = 9$$

$$|2-x| = \begin{cases} (2-x), & x \geq 2 \\ -(2-x), & x < 2 \end{cases}$$

$$\boxed{1} \quad x \geq 2$$

$$\frac{4-x^2}{2-x} = 9$$

$$2-x=0$$

$$\boxed{x=2}$$

$$\frac{(2-x)(2+x)}{(2-x)} = 9$$

$$\therefore 2+x=9$$

$$\boxed{x=7}$$

$$\boxed{2} \quad x < 2$$

$$\cancel{m} \frac{4-x^2}{-(2-x)} = 9$$

$$\Rightarrow \frac{(2-x)(2+x)}{-\cancel{(2-x)}} = 9$$

$$-2-x=9$$

$$-x=11 \Rightarrow \boxed{x=-11}$$

~~XXXXXXXXXXXX~~

$$\frac{4-(-11)^2}{2-(-11)} = \overset{\text{بالقوة}}{\frac{4-121}{13}} = \frac{-117}{13} = -9 \quad \text{دور}$$

$$S = \{7\}$$

⑧