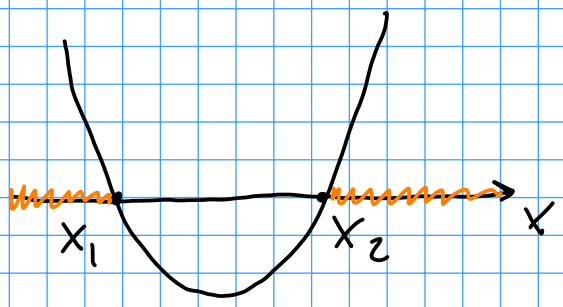
$$ax^2+bx+c>0 \qquad a,b,c \in \mathbb{R} \quad , a \neq 0$$

$\begin{cases} y_1 = ax^2+bx+c \rightarrow \text{parabola} \\ y_2 = 0 \quad \text{asse } x \\ y_1 > y_2 \end{cases}$



$y = ax^2+bx+c$

PARABOLA DI VERTICE V

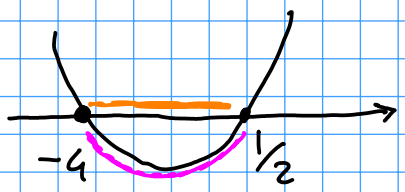
ASSE DI SIMM. $\parallel$ asse y

$a>0$  $a<0$ 

$$2x^2+7x-4 \leq 0$$

$\begin{cases} y = 2x^2+7x-4 \\ y = 0 \end{cases} \Rightarrow \quad 2x^2+7x-4=0$

$$x = \frac{-7 \pm \sqrt{49+32}}{4} = \begin{cases} -4 \\ \frac{1}{2} \end{cases}$$

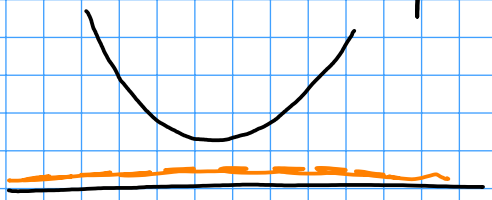
$\begin{cases} \text{ho due soluzioni:} \\ a>0 \end{cases} \Rightarrow$ 

$$\boxed{-4 \leq x \leq \frac{1}{2}}$$

$X^2 - 3X + 10 > 0$

$X^2 - 3X + 10 = 0$ $\quad X = \dfrac{3 \pm \sqrt{9 - 40}}{2}$ $\quad \nexists\, x \in \mathbb{R}$

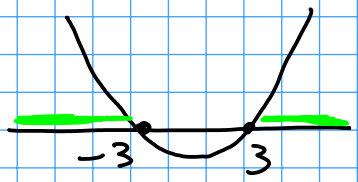
↳ la parabola NON INTERSECA l'asse x !



$\forall x \in \mathbb{R}$

$X^2 - 9 \geq 0$

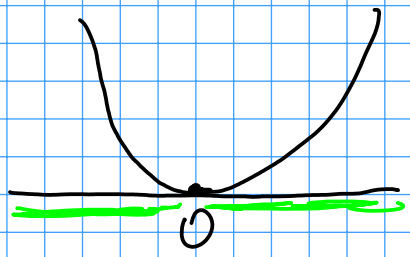
$X^2 - 9 = 0$ $\quad X^2 = 9$ $\quad X = \pm 3$



$x \leq -3 \ \vee \ x \geq 3$

$X^2 > 0$

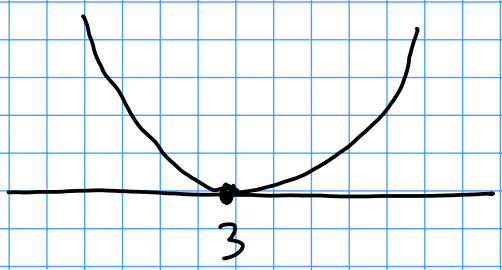
$X^2 = 0$ $\quad X = 0$



$x \neq 0$

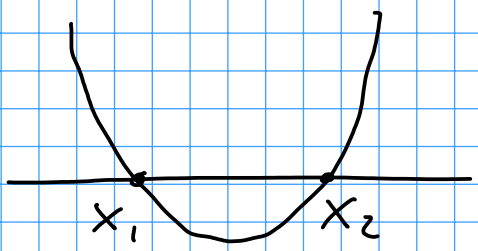
$X^2 - 6X + 9 \leq 0$

$X^2 - 6X + 9 = 0 \quad \rightarrow \quad \Delta = 0 \qquad X = 3$



$\boxed{X = 3}$

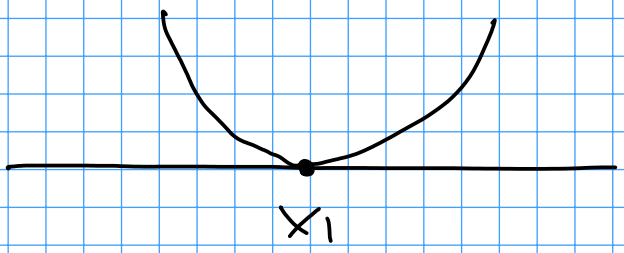
$a > 0$



$>, \geq 0$ V. EST.

$<, \leq 0$ V. INT.

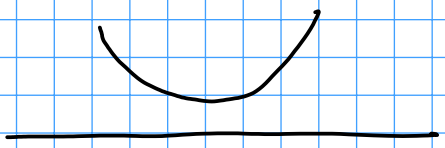
$\Delta > 0 \rightarrow$ 2 sol.



$\Delta = 0 \rightarrow$ 1 sol.

$> 0 \quad x \neq x_1 \qquad < 0 \quad \nexists\, x \in \mathbb{R}$

$\geq 0 \quad \forall x \in \mathbb{R} \qquad \leq 0 \quad x = x_1$



$\Delta < 0 \rightarrow$ 0 sol.

$>, \geq 0 \quad \forall x \in \mathbb{R} \qquad <, \leq 0 \quad \nexists\, x \in \mathbb{R}$

$2x^2 + 7x - 4 \leq 0$

se $\Delta \geq 0 \qquad ax^2 + bx + c = 0$

$\Downarrow$

$a(x - x_1)(x - x_2) = 0$

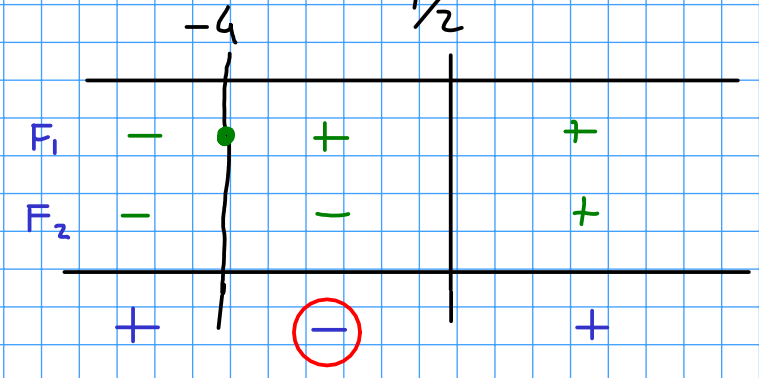
$x_1 = -4 \; ; \; x_2 = \frac{1}{2}$

$2\left(x+4\right)\left(x-\frac{1}{2}\right) \leq 0$

$F_1 \qquad F_2$

$F_1 \geq 0 \quad x + 4 \geq 0 \quad x \geq -4$

$F_2 \geq 0 \quad x - \frac{1}{2} \geq 0 \quad x \geq \frac{1}{2}$



$-4 \leq x \leq 1/2$

$$-x^2+4x-3>0$$

$$-x^2+4x-3=0$$

$$x=\frac{-4\pm\sqrt{16-12}}{-2}=\begin{cases}3\\1\end{cases}$$

	1		3	
	−	−		+
	−	+		+
	+	−		+

$x<1 \quad \vee \quad x>3$

SBAGLIATO !

corretto

$$-x^2+4x-3>0$$

$$x^2-4x+3<0$$

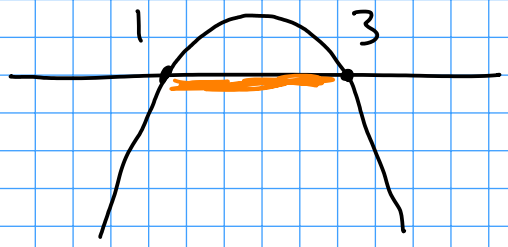
$$x=\begin{cases}1\\3\end{cases}$$

$$-x^2+4x-3 = -(x-1)(x-3)$$

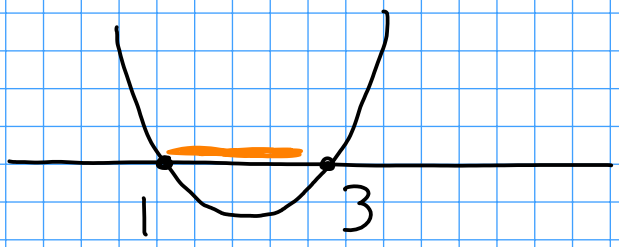
$$-x^2+4x-3>0 \implies -(x-1)(x-3)>0$$

$$x^2-4x+3<0 \implies (x-1)(x-3)<0$$

$-x^2+4x-3>0$



$x^2-4x+3<0$



$x^3-4x^2-3x+12<0$

$x^2(x-4)-3(x-4)<0$

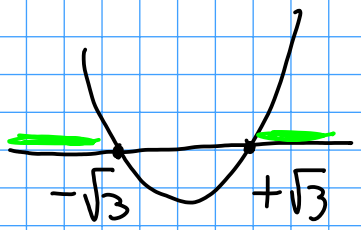
$(x-4)(x^2-3)<0$

$F_1 \quad F_2$

$F_1>0 \qquad x-4>0 \qquad x>4$

$F_2>0 \qquad x^2-3>0$

$x^2-3=0 \qquad x=\pm\sqrt{3}$



$x<-\sqrt{3} \quad \vee \quad x>\sqrt{3}$

	$-\sqrt{3}$		$\sqrt{3}$		4	
F_1	$-$		$-$		$-$	$+$
F_2	$+$		$-$		$+$	$+$
	$-$		$+$		$-$	$+$

$x<-\sqrt{3} \quad \vee \quad \sqrt{3}<x<4$

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

$a = 2 \qquad b = -3 \qquad c = 5$

$$\Delta = b^2 - 4ac = (-3)^2 - 4 \cdot 2 \cdot 5 = 9 - 40 = -31$$

$$V = \left(-\frac{b}{2a} ; -\frac{\Delta}{4a} \right) = \left(-\frac{-3}{4} ; -\frac{-31}{8} \right) = \left(\frac{3}{4} ; \frac{31}{4} \right)$$