

# DISEQUAZIONI DI II GRADO



# IL SEGNO DI UN PRODOTTO

$$(x-3)(2-x)(x+1) > 0$$

$N_1$

$N_2$

$N_3$



$$N_1 > 0$$

$$(x-3) > 0$$

$$x > 3$$

$$N_2 > 0$$

$$2-x > 0$$

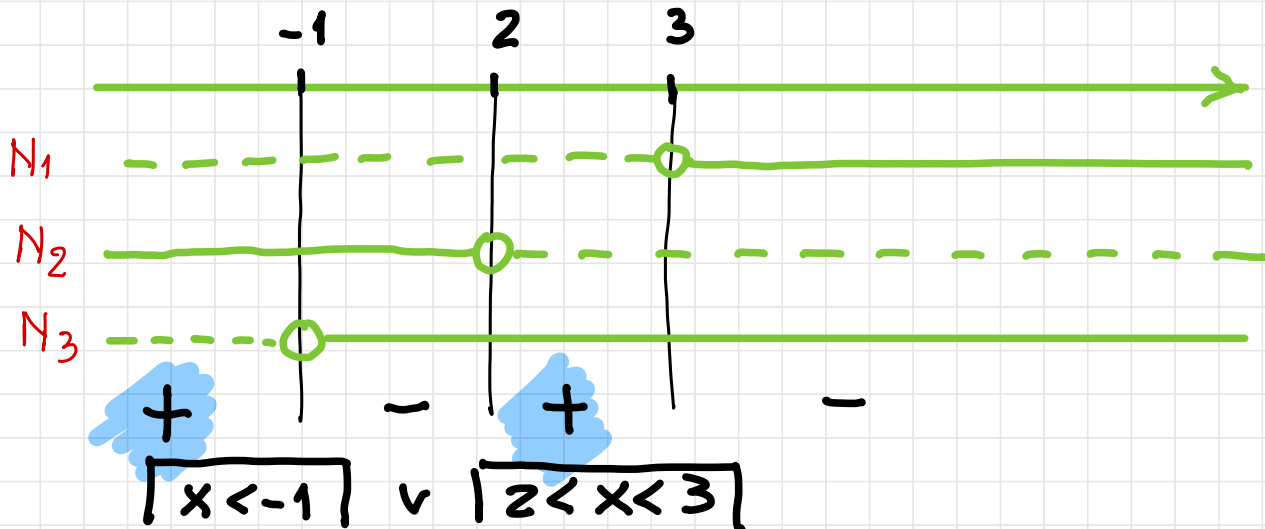
$$-x > -2$$

$$x < +2$$

$$N_3 > 0$$

$$x+1 > 0$$

$$x > -1$$



## ESEMPIO 2:

$$(x-1)(3x-4)(2-3x) < 0$$

$N_1$

$$N_1 > 0 \quad x-1 > 0 \quad \rightarrow \quad x > 1$$

$N_2$

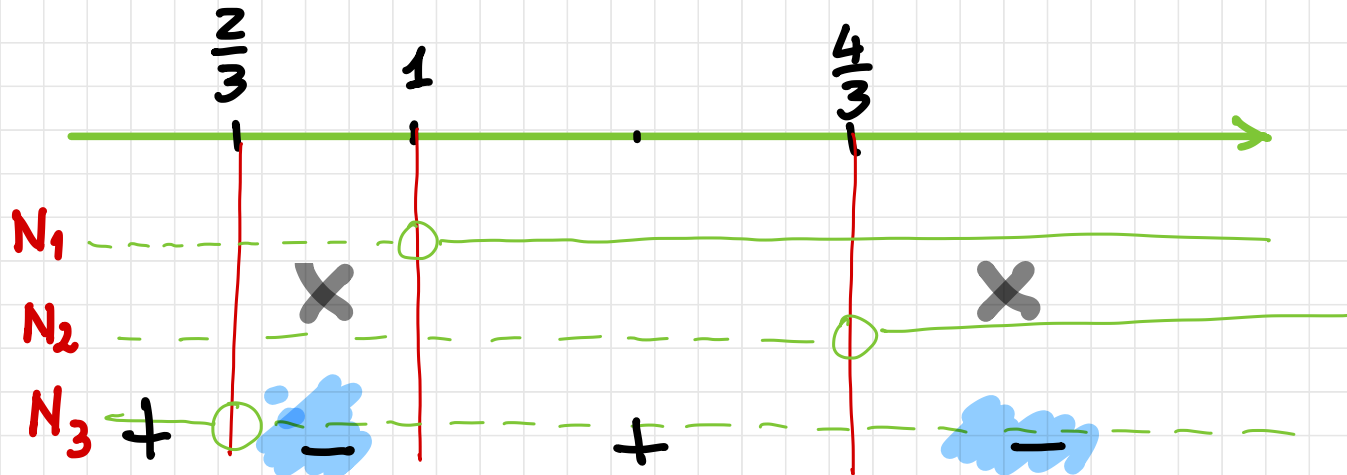
$$N_2 > 0 \quad 3x-4 > 0 \quad \rightarrow \quad 3x > 4 \quad x > \frac{4}{3}$$

$$N_3 > 0 \quad 2-3x > 0 \quad \rightarrow \quad -3x > -2 \quad x < \frac{2}{3}$$

## SOLUZIONI

$$\frac{2}{3} < x < 1$$

$$x > \frac{4}{3}$$



# DISEQUAZIONI DI II GRADO

$$x^2 - x - 20 > 0$$

DISEQUAZIONE

$$x^2 - x - 20 = 0$$

EQUAZIONE ASSOCIATA ALLA DISEQUAZIONE

$$a = 1$$

$$b = -1$$

$$c = -20$$

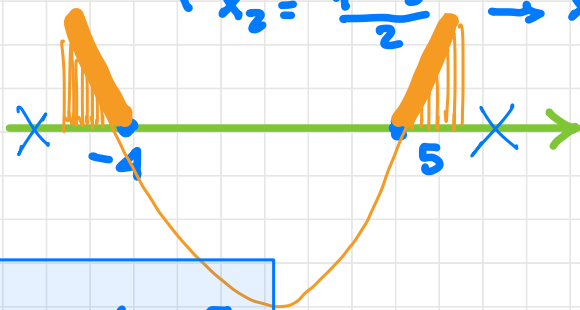
$$\Delta = b^2 - 4ac = 1 - 4 \cdot 1 \cdot (-20) = 81$$

$$x_{1,2} = \frac{+1 \pm \sqrt{81}}{2}$$

$$x_1 = \frac{1+9}{2} \rightarrow x_1 = 5$$

$$x_2 = \frac{1-9}{2} \rightarrow x_2 = -4$$

GRAFICO



$$x < -4 \vee x > 5$$

LA DISEQ.  
DI II É UNA  
PARABOLA:

→ SE  $a > 0$   $\cup$   
SE  $a < 0$   $\cap$

$$x^2 + 9x + 20 < 0$$

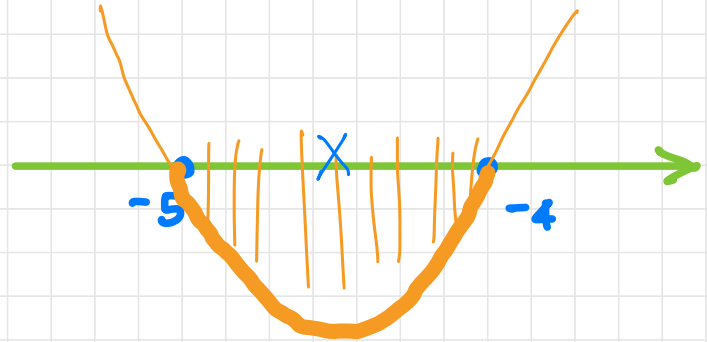


$$x^2 + 9x + 20 = 0 \text{ Eq. Ass.}$$

$$a=1 \quad b=9 \quad c=20$$

$$\Delta = 81 - 80 = 1$$

$$x_{1,2} = \frac{-9 \pm 1}{2} \begin{cases} x_1 = -4 \\ x_2 = -5 \end{cases}$$



$$-5 < x < -4$$

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

$$\Delta = 9 - 8 = 1$$

$$a=1 \quad b=-3 \quad c=2$$

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

$$x^2 - 3x + 2 = 0 \text{ Eq. Ass.}$$

$$x = \frac{3 \pm 1}{2} = \begin{cases} +2 \\ +1 \end{cases}$$

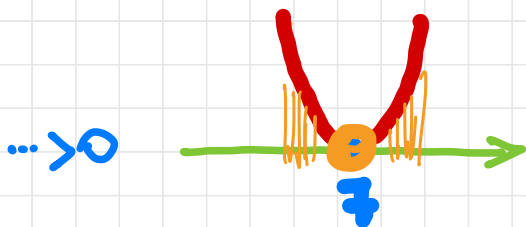
$$x_1 = 2 \\ x_2 = 1$$



$$1 < x < 2$$

$\Delta = 0$  COSA SUCCEDDE ?

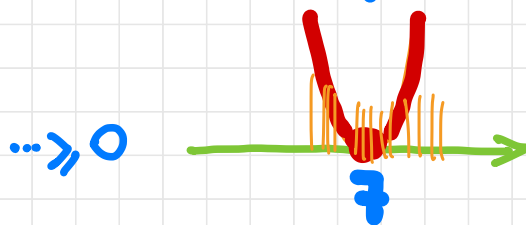
1 soluzione  
DELL' EQUAZ. ASSOCIATA.



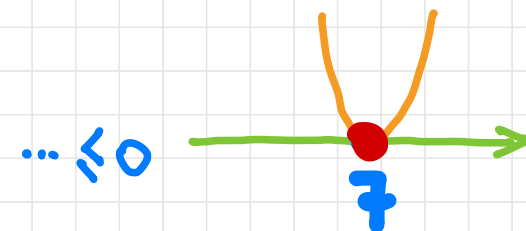
$$x \neq \frac{7}{2}$$



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



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



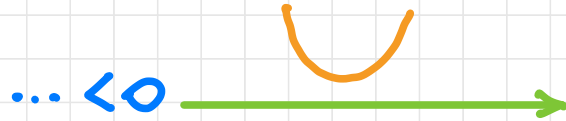
$$x = \frac{7}{2}$$

$$\Delta < 0$$

nessuna soluzione eq. ASSOCIATA



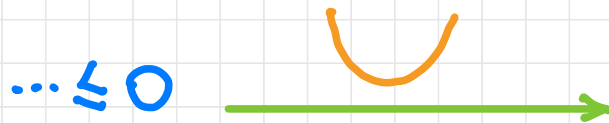
$$\forall x \in \mathbb{R}$$



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



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



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