

$$\begin{cases} \frac{|x-1| - |x|}{2 - \sqrt[3]{x+4}} < 0 \\ \frac{\sqrt{6-x} - 6 + 4x}{2x-2 + \sqrt{9-x}} \leq 0 \end{cases}$$

I disequazioni

D)  $2 - \sqrt[3]{x+4} > 0$  per  $-\sqrt[3]{x+4} > -2$   
 $\sqrt[3]{x+4} < 2$   
 $x+4 < 8$   $x < 4$

$2 - \sqrt[3]{x+4} \leq 0$  per  $x \geq 0$

N)  $|x-1| - |x|$

Studio i segni degli argomenti

$x-1 > 0$  per  $x > 1$   $x > 0$  per  $x > 0$

	0	1	x
$x-1$	-	+	
$x$	-	+	

- A) per  $x < 0$  bisogna studiare il segno di  $-(x-1) + x = +1$   
 B) per  $0 \leq x \leq 1$  " " " " "  $-(x-1) - x = -2x+1$   
 C) per  $x > 1$  " " " " "  $(x-1) - x = -1$

A) per  $x < 0$   $N = 1 > 0 \forall x$

B)  $-2x+1 > 0$  per  $x < \frac{1}{2}$  quindi  $N > 0$  per  $0 < x < \frac{1}{2}$   
 $N < 0$  per  $\frac{1}{2} < x < 1$

c) per  $x > 1$   $N = -1 < 0 \quad \forall x$  ②

	0	$\frac{1}{2}$	1	4	x
N	+	+	○ -	-	-
D	+	+	+	+	○ -
N/D	+	+	○ -	-	<del>+</del> +

I disequazione soddisfatta per  $\boxed{\frac{1}{2} < x < 4}$

II Disequazione

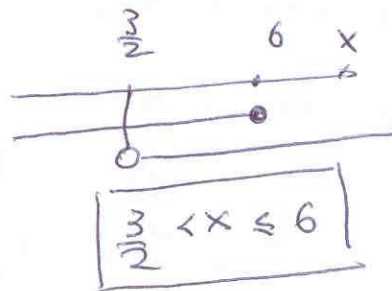
N)  $\sqrt{6-x} - 6 + 4x$

Vediamo, prima quando esiste, e poi quando è positivo.

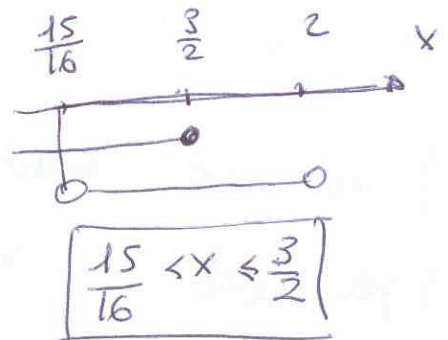
Esiste per  $6-x \geq 0 \Rightarrow x \leq 6$

$\sqrt{6-x} - 6 + 4x > 0 \Rightarrow \sqrt{6-x} > 6-4x$

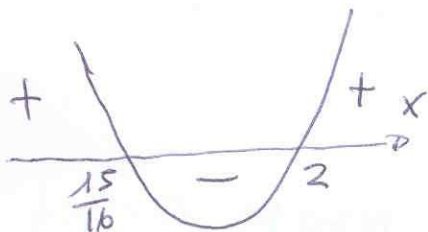
$$\begin{cases} 6-x \geq 0 & x \leq 6 \\ 6-4x < 0 & x > \frac{3}{2} \end{cases}$$



$$\begin{cases} 6-4x \geq 0 & x \leq \frac{3}{2} \\ 6-x > (6-4x)^2 & 6-x > 36-48x+16x^2 \end{cases}$$



$16x^2 - 47x + 30 < 0$  per  $\frac{15}{16} < x < 2$

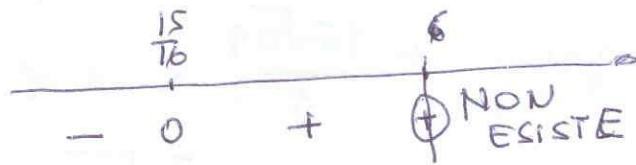


Riassumendo

$$\sqrt{6-x} > 6-4x$$

per  $\frac{15}{16} < x \leq 6$   
 anche =

Numero di



$N > 0$	per	$\frac{15}{16} < x \leq 6$
$N = 0$	per	$x = \frac{15}{16}$
$N < 0$	per	$x < \frac{15}{16}$

D)  $2x-2 + \sqrt{9-x}$

Stesso ragionamento del Numeratore

D esiste per  $9-x \geq 0$

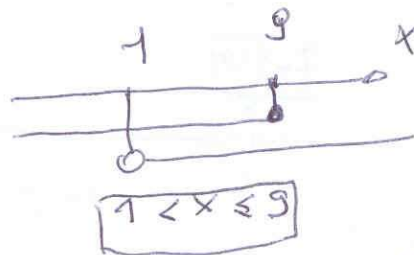
$$x \leq 9$$

$$2x-2 + \sqrt{9-x} > 0$$

$$\Rightarrow \sqrt{9-x} > -2x+2$$

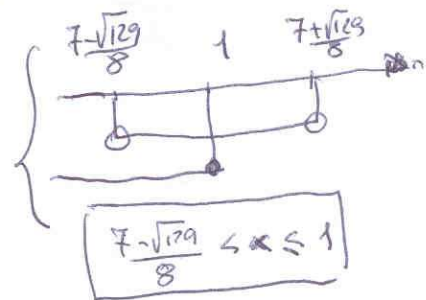
$$\begin{cases} 9-x \geq 0 \\ -2x+2 \leq 0 \end{cases}$$

$$\begin{cases} x \leq 9 \\ x > 1 \end{cases}$$

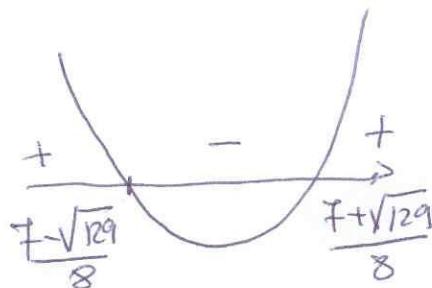


$$\begin{cases} -2x+2 \geq 0 \\ 9-x > (2x+2)^2 \end{cases}$$

$$\begin{cases} x \leq 1 \\ 9-x > 4x^2 - 8x + 4 \end{cases}$$



$$4x^2 - 7x - 5 < 0$$



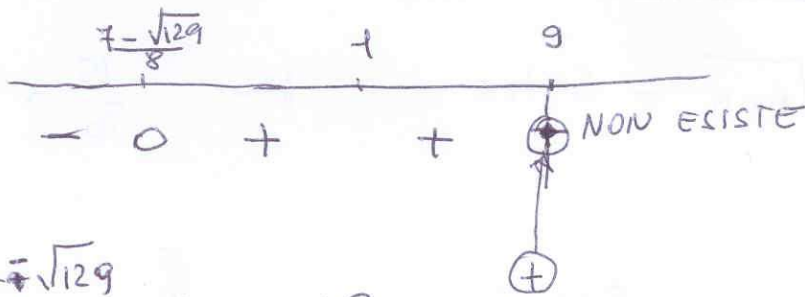
$$\frac{7-\sqrt{129}}{8} < x < \frac{7+\sqrt{129}}{8}$$

$\approx 0,54 \qquad \approx 2,29$

Riassumendo

$$\sqrt{9-x} > -2x+2 \quad \text{per}$$

(4)

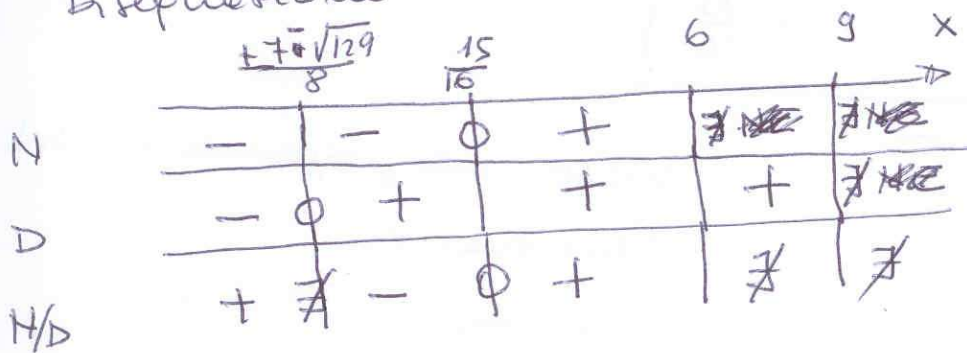


$$D > 0 \quad \text{per} \quad \frac{7+\sqrt{129}}{8} < x \leq 9$$

$$D = 0 \quad \text{per} \quad x = \frac{7+\sqrt{129}}{8}$$

$$D < 0 \quad \text{per} \quad x < \frac{7+\sqrt{129}}{8}$$

II Disposizione

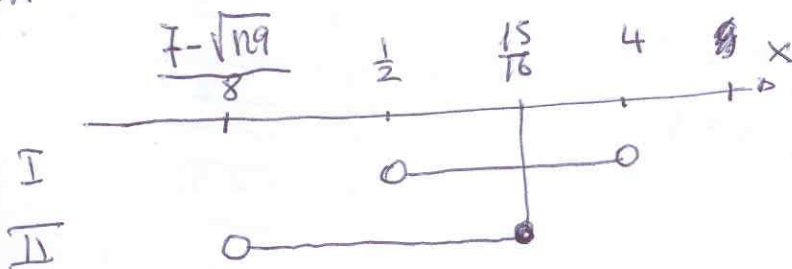


~~NON ESISTE~~

$$\frac{7+\sqrt{129}}{8} < x \leq \frac{15}{16}$$

~~NON~~

SISTEMA



$$\frac{1}{2} < x \leq \frac{15}{16}$$