n. 101

$$\frac{2\sqrt{x}+4}{x-4} - \frac{4\sqrt{x}}{\sqrt{x}-2} = \frac{3\sqrt{x}-2}{\sqrt{x}+2}$$

$$\frac{2(\sqrt{x}+2)}{(\sqrt{x}+2)(\sqrt{x}-2)} - \frac{4\sqrt{x}}{\sqrt{x}-2} - \frac{3\sqrt{x}-2}{\sqrt{x}+2} = 0$$

Supposto $\sqrt{x} \neq -2$ sempre

$$\frac{2\sqrt{x}+4-4\sqrt{x}(\sqrt{x}+2)-(3\sqrt{x}-2)(\sqrt{x}-2)}{(\sqrt{x}+2)(\sqrt{x}-2)} = 0$$

C.E. $\sqrt{x}+2 \neq 0$ sempre
$\sqrt{x} \neq 2$, $x \neq 4$

$$2\sqrt{x}+4-4x-8\sqrt{x}-3x+6\sqrt{x}+2\sqrt{x}-4=0$$

$$2\sqrt{x}-7x=0$$

$2\sqrt{x} = 7x$

$4x = 49x^2 \quad | \quad 49x^2 - 4x = 0$

$x(49x - 4) = 0$

$x_1 = 0 \qquad x_2 = 4/49$

rec.

$\downarrow$

$2 \cdot \frac{2}{7} = 7 \cdot \frac{4}{49}$

$\frac{4}{7} = \frac{4}{7}$

acc.

$\sqrt{A} = B$

$A = B^2 \longrightarrow B = \pm\sqrt{A}$

$x^2 = 4 \rightarrow x = \pm 2$

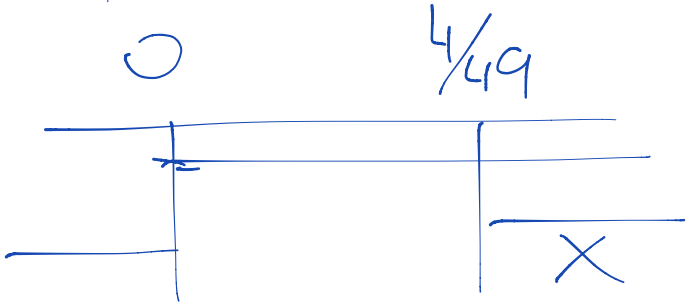
$$2\sqrt{x} = 7x$$

$$\begin{cases} x \geq 0 \\ x \geq 0 \end{cases} \Rightarrow x \geq 0$$

$$2\sqrt{x} < 7x$$

$$\begin{cases} x \geq 0 \\ 7x > 0 \\ 4x < 49x^2 \end{cases} \qquad \begin{cases} x \geq 0 \\ x > 0 \\ 49x^2 - 4x > 0 \end{cases}$$

$$\begin{cases} x > 0 \\ x(49x - 4) > 0 \end{cases} \qquad \begin{cases} x > 0 \\ x < 0 \vee x > 4/49 \end{cases}$$



$$S = \left(\frac{4}{49}; +\infty\right)$$

$$\sqrt{5x-1} < 2x$$

$$\begin{cases} 5x-1 \geq 0 \\ 2x > 0 \\ 5x-1 < 4x^2 \end{cases}$$

cond. exist.
Concord. segno

Eq. in modulo

1) $3 - |x^2-2| = 1$

$|x^2-2| = 2$

$|A(x)| = k > 0$

$A(x) = \pm k$

$x^2 - 2 = 2$

$x^2 = 4$

$x = \pm 2$

$x^2 - 2 = -2$

$x = 0$

2) $|x^2-2x| = 3x$

$x^2-2x \geq 0 \quad x(x-2) \geq 0$

$x \leq 0 \vee x \geq 2$

	0		2	
	+	−		+

1°) $\begin{cases} x < 0 \vee x \geq 2 \\ x^2-2x = 3x \end{cases}$

$\begin{cases} x < 0 \vee x \geq 2 \\ x^2-5x = 0 \end{cases}$ $\quad \begin{cases} x < 0 \vee x \geq 2 \\ x_1 = 0, \; x_2 = 5 \end{cases}$

2°) $\begin{cases} 0 \leq x < 2 \\ -x^2+2x = 3x \end{cases}$ $\quad \begin{cases} 0 \leq x < 2 \\ x^2+x = 0 \end{cases}$

$\begin{cases} 0 \leq x < 2 \\ x = 0; \; x = -1 \end{cases}$ n.a.

$S = \{0; 5\}$

D.S. in modulo

$$|4-10x|-|6x+3|\geq 0$$

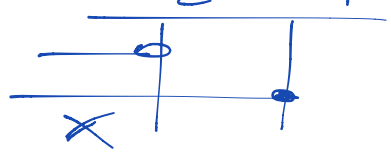
I) $4-10x\geq 0$; $x\leq 4/10$ ^{2} 5

II) $6x+3\geq 0$; $x\geq -1/2$

	$-\frac{1}{2}$		$\frac{2}{5}$	
+		+		−
−		+		+

1°) $\begin{cases} x<-1/2 \\ 4-10x+6x+3\geq 0 \end{cases}$ $\begin{cases} x<-1/2 \\ -4x\geq -7 \end{cases}$

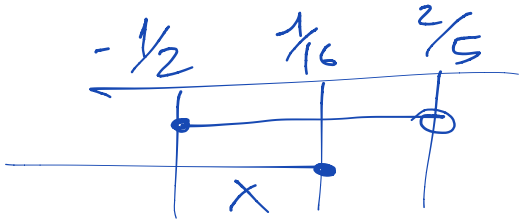
$\begin{cases} x<-1/2 \\ x\leq 7/4 \end{cases}$



$S_1 = (-\infty, -1/2)$

2°) $\begin{cases} -\frac{1}{2}\leq x<\frac{2}{5} \\ 4-10x-6x-3\geq 0 \end{cases}$ $\begin{cases} -\frac{1}{2}\leq x<\frac{2}{5} \\ -16x\geq -1 \end{cases}$

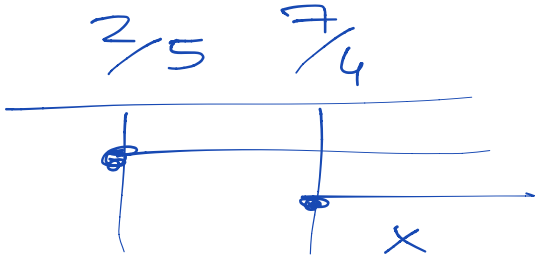
$$\begin{cases} -\frac{1}{2} \le x < \frac{2}{5} \\ x \le \frac{1}{16} \end{cases}$$



$$S_2 = \left[-\frac{1}{2}, \frac{1}{16}\right]$$

3°) $\begin{cases} x \ge \frac{2}{5} \\ 10x - 4 - 6x - 3 \ge 0 \end{cases}$ $\begin{cases} x \ge \frac{2}{5} \\ 4x \ge 7 \end{cases}$

$$\begin{cases} x \ge \frac{2}{5} \\ x \ge \frac{7}{4} \end{cases}$$



$$S_3 = \left[\frac{7}{4}, +\infty\right)$$

$$S = S_1 \cup S_2 \cup S_3 =$$

$$= \left(-\infty, -\frac{1}{2}\right) \cup \left[-\frac{1}{2}, \frac{1}{16}\right] \cup \left[\frac{7}{4}, +\infty\right) =$$

$$= \left(-\infty ; \frac{1}{16}\right] \cup \left[\frac{7}{4} ; +\infty\right)$$

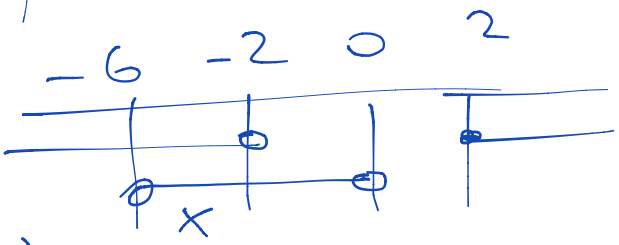
$$|x^2-4| + x - 3 < -5x - 7$$

$x^2 - 4 \geq 0$; $x \leq -2 \vee x \geq 2$

-2	2
$+$ |	$-$ | $+$

I) $\begin{cases} x < -2 \vee x \geq 2 \\ x^2 - 4 + x - 3 < -5x - 7 \end{cases}$

$\begin{cases} x < -2 \vee x \geq 2 \\ x^2 + 6x < 0 \end{cases}$ $\begin{cases} x < -2 \vee x \geq 2 \\ -6 < x < 0 \end{cases}$



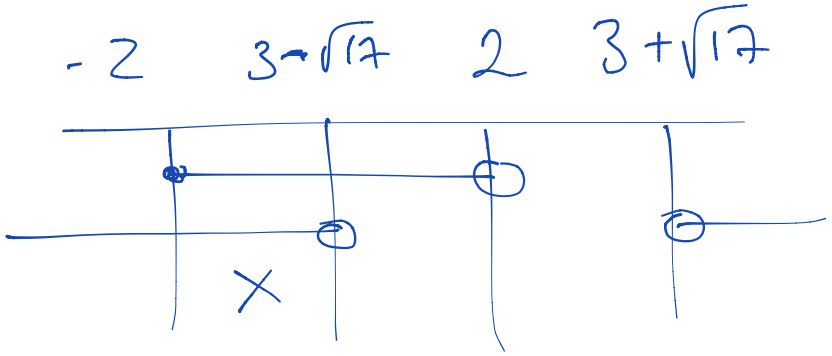
$S_1 = (-6 ; -2)$

II) $\begin{cases} -2 \le x < 2 \\ -x^2 + 4 + x - 3 < -5x - 7 \end{cases}$

$\begin{cases} -2 \le x < 2 \\ x^2 - 6x - 8 > 0 \end{cases}$

$\frac{\Delta}{4} = 9 + 8 = 17 \qquad x_{1,2} = +3 \pm \sqrt{17}$

$\begin{cases} -2 \le x < 2 \\ x < 3 - \sqrt{17} \vee x > 3 + \sqrt{17} \end{cases}$



$S_2 = [-2, 3 - \sqrt{17})$

$S = S_1 \cup S_2 = (-6; 3 - \sqrt{17})$