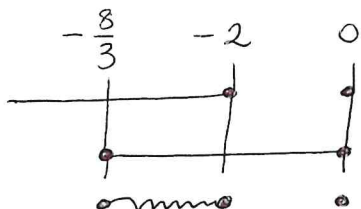


# Esercizi sulle DIS. IRRAZIONALI assegnati per casa

$$1) \boxed{\sqrt{2x+x^2} \leq -\frac{1}{2}x} \Leftrightarrow \begin{cases} 2x+x^2 \geq 0 \\ -\frac{1}{2}x \geq 0 \\ 2x+x^2 \leq (-\frac{1}{2}x)^2 \end{cases} \Leftrightarrow \begin{cases} x(x+2) \geq 0 \\ x \leq 0 \\ 2x+x^2 \leq \frac{1}{4}x^2 \end{cases}$$

$$\Leftrightarrow \begin{cases} x \leq -2 \vee x \geq 0 \\ x \leq 0 \\ \frac{3}{4}x^2 + 2x \leq 0 \end{cases} \begin{cases} 1^a \wedge 2^a \quad x \leq -2 \vee x = 0 \\ x(\frac{3}{4}x+2) \leq 0 \end{cases} \begin{cases} x \leq -2 \vee x = 0 \\ -\frac{8}{3} \leq x \leq 0 \end{cases}$$

$$-\frac{8}{3} < -2 = -\frac{6}{3}$$



$$\boxed{S \quad x \in [-\frac{8}{3}, -2] \cup \{0\}}$$

$$2) \begin{cases} \sqrt{4x^2-11x} > 2x-5 \quad (1) \\ \sqrt{x^2-7x+10} < x-4 \quad (2) \end{cases}$$

$$(1) \quad \sqrt{4x^2-11x} > 2x-5 \Leftrightarrow \begin{cases} 4x^2-11x \geq 0 \\ 2x-5 < 0 \end{cases} \Leftrightarrow \begin{cases} 4x^2-11x \geq 0 \\ 2x-5 \geq 0 \\ 4x^2-11x > (2x-5)^2 \end{cases}$$

$$\Leftrightarrow \begin{cases} x \leq 0 \vee x \geq \frac{11}{4} \\ x < \frac{5}{2} \end{cases} \Leftrightarrow \begin{cases} x \leq 0 \vee x \geq \frac{11}{4} \\ x \geq \frac{5}{2} \end{cases}$$

$$\frac{5}{2} < \frac{11}{4} \Leftrightarrow 20 < 22$$

$$4x^2-11x > 4x^2-20x+25$$

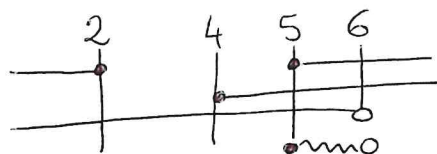
$$\Leftrightarrow x \leq 0 \quad \left( \begin{array}{c} 0 \quad \frac{5}{2} \quad \frac{11}{4} \\ \text{---} \quad \text{---} \quad \text{---} \\ \text{---} \quad \text{---} \quad \text{---} \end{array} \right) \Leftrightarrow \begin{cases} 1^a \wedge 2^a \quad x \geq \frac{11}{4} \\ 9x > 25 \end{cases} \Leftrightarrow x \leq 0 \vee \begin{cases} x \geq \frac{11}{4} \\ x > \frac{25}{9} \end{cases}$$

$$\frac{25}{9} > \frac{11}{4} \Leftrightarrow 100 > 99$$

$$\Leftrightarrow x \leq 0 \vee x > \frac{25}{9} \quad \left( \begin{array}{c} \frac{11}{4} \quad \frac{25}{9} \\ \text{---} \quad \text{---} \\ \text{---} \quad \text{---} \end{array} \right) \quad S_1 \quad x \leq 0 \vee x > \frac{25}{9}$$

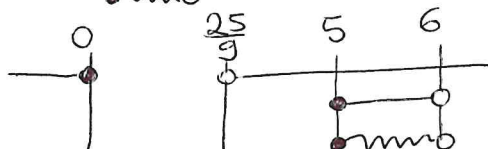
$$(2) \quad \sqrt{x^2-7x+10} < x-4 \Leftrightarrow \begin{cases} x^2-7x+10 \geq 0 \\ x-4 > 0 \\ x^2-7x+10 < (x-4)^2 \end{cases} \Leftrightarrow \begin{cases} (x-2)(x-5) \geq 0 \\ x \geq 4 \\ x^2-7x+10 < x^2-8x+16 \end{cases}$$

$$\Leftrightarrow \begin{cases} x \leq 2 \vee x \geq 5 \\ x \geq 4 \\ x < 6 \end{cases}$$



$$S_2 \quad 5 \leq x < 6$$

$$SOL. \text{ SISTEMA} = S_1 \cap S_2$$



$$\boxed{S \quad x \in [5, 6]}$$