

EQUAZIONI E DISEQUAZIONI IRRAZIONALI

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EQUAZIONI

$$\sqrt[n]{A(x)} = B(x)$$

• n pari

$$\sqrt[n]{A(x)} = B(x)$$

$$\begin{cases} A(x) \geq 0 \\ B(x) \geq 0 \\ A(x) = [B(x)]^n \end{cases}$$

• n dispari

$$\sqrt[n]{A(x)} = B(x)$$

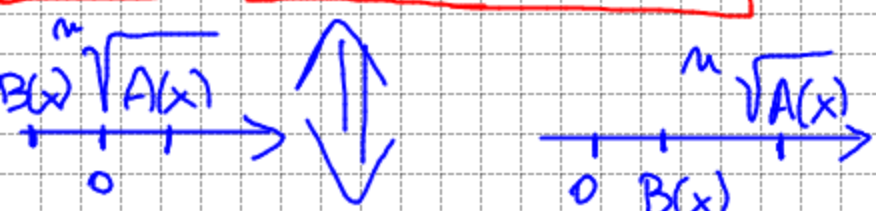
$$\begin{matrix} \updownarrow \\ A(x) = [B(x)]^n \end{matrix}$$

DISEQUAZIONI

$$\sqrt[n]{A(x)} > B(x) \quad \text{oppure} \quad \sqrt[n]{A(x)} < B(x)$$

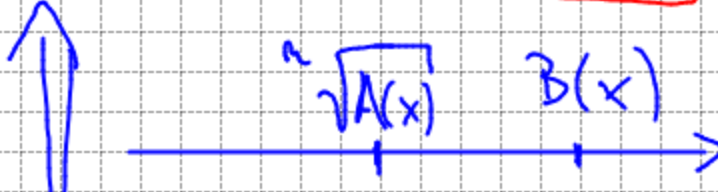
• n pari

$$\sqrt[n]{A(x)} > B(x)$$



$$\begin{cases} A(x) \geq 0 \\ B(x) < 0 \\ A(x) > [B(x)]^n \end{cases} \cup \begin{cases} B(x) \geq 0 \\ A(x) > [B(x)]^n \end{cases}$$

$$\sqrt[n]{A(x)} < B(x)$$



$$\begin{cases} A(x) \geq 0 \\ B(x) > 0 \\ A(x) < [B(x)]^n \end{cases}$$

• n dispari

$$\sqrt[n]{A(x)} > B(x)$$

$$\begin{matrix} \updownarrow \\ A(x) > [B(x)]^n \end{matrix}$$

$$\sqrt[n]{A(x)} < B(x)$$

$$\begin{matrix} \updownarrow \\ A(x) < [B(x)]^n \end{matrix}$$

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$$\sqrt{16+x^2-x} \leq -3$$

$$\sqrt{16+x^2} \leq x-3$$

$$\sqrt{A(x)} \leq B(x)$$

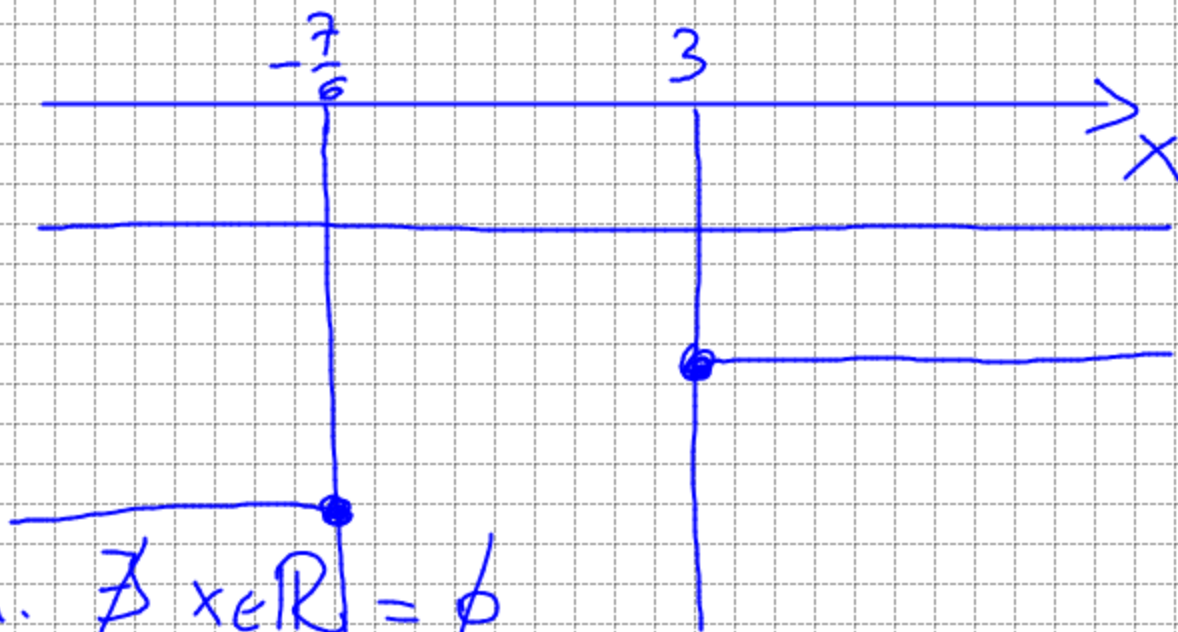
$$\begin{cases} A(x) \geq 0 \\ B(x) \geq 0 \\ A(x) \leq [B(x)]^n \end{cases}$$

$$\begin{cases} 16+x^2 \geq 0 \\ x-3 \geq 0 \\ (16+x^2) \leq (x-3)^2 \end{cases} \Rightarrow$$

$$\begin{cases} \forall x \in \mathbb{R} \\ x \geq 3 \\ 16+x^2 \leq x^2+9-6x \end{cases}$$

$$\begin{cases} \forall x \in \mathbb{R} \\ x \geq 3 \\ 6x \leq -7 \end{cases}$$

$$\begin{aligned} & \textcircled{1} \forall x \in \mathbb{R} \\ & \textcircled{2} x \geq 3 \\ & \textcircled{3} x \leq -\frac{7}{6} \end{aligned}$$



Sol. sist. $\exists x \in \mathbb{R} = \emptyset$

Esercizio

3/3

$$\sqrt{x^2 - 4} > 4 - x$$



$$\begin{cases} x^2 - 4 \geq 0 \\ 4 - x < 0 \end{cases} \cup \begin{cases} 4 - x \geq 0 \\ x^2 - 4 > (4 - x)^2 \end{cases}$$

$$\sqrt{A(x)} > B(x)$$



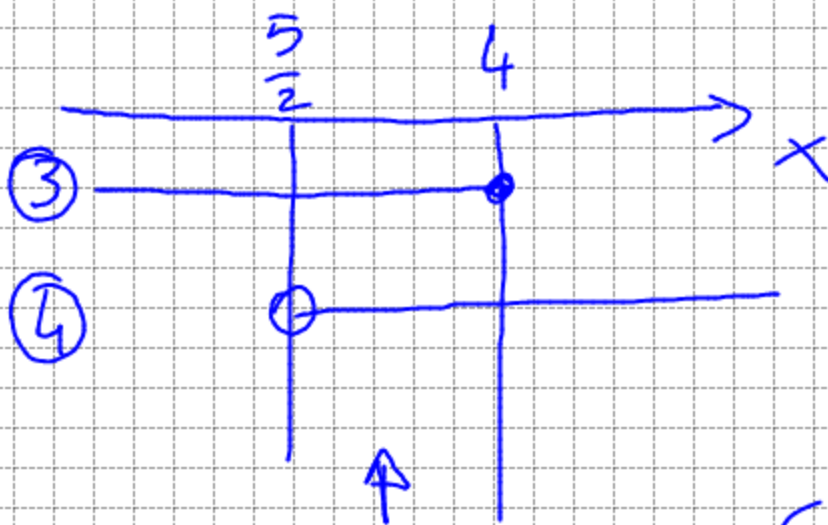
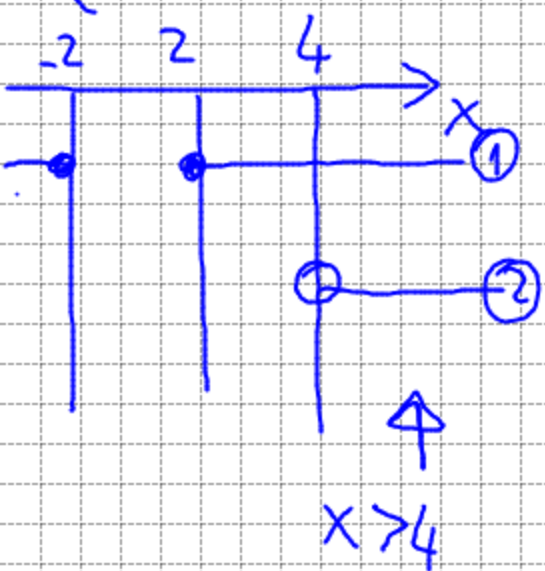
$$\begin{cases} B(x) < 0 \\ A(x) \geq 0 \end{cases} \cup \begin{cases} B(x) \geq 0 \\ A(x) > [B(x)]^2 \end{cases}$$

① $x \leq -2 \cup x \geq 2$

② $x > 4$

③ $x \leq 4$

④ $x - 4 > 16 + x - 8x \rightarrow 8x > 20 \rightarrow x > \frac{5}{2}$



$\cup \frac{5}{2} < x \leq 4$

Sol. $x > \frac{5}{2}$

