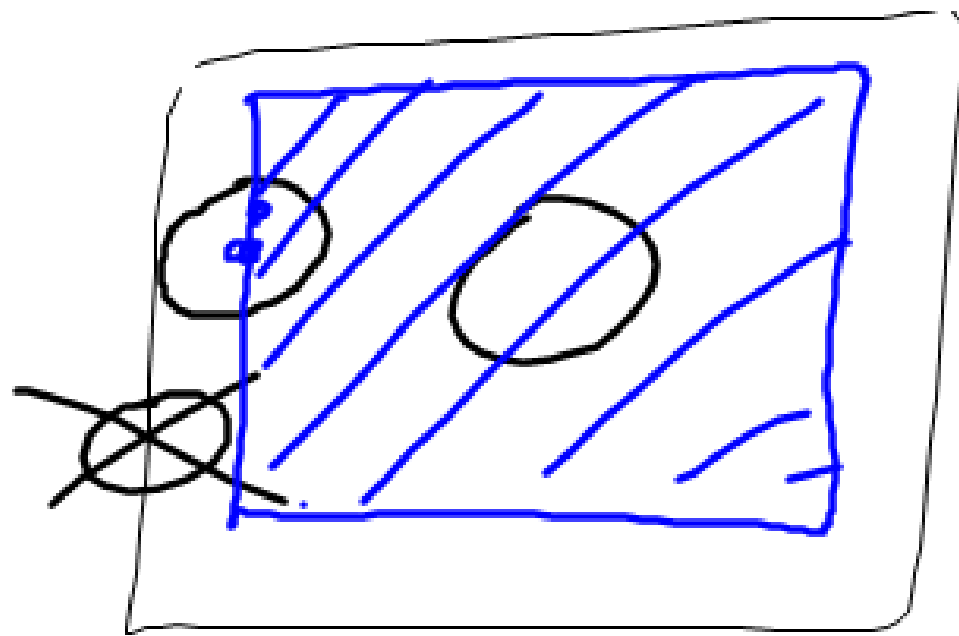




10um

$$p = \frac{\text{CASI FAU}}{\text{CASI POSS}}$$



MONETA DA
2 €

($\varnothing = 25,75 \text{ mm}$)

$$x^m > a$$

m PARI

$$x^4 > 16 \Leftrightarrow x^4 - 16 > 0$$



$$x^m < a$$

m PARI

$$x^4 < 16$$

$$x^4 < -2$$

$$x^4 > -2$$

$$x^4 + 2 > 0$$

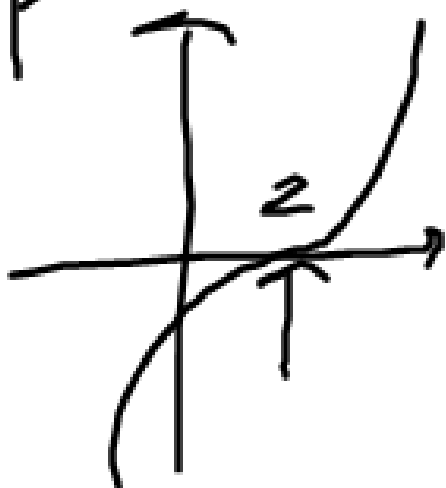
$$\forall x$$

$x^m > a$
m disp

$$x^3 > 8$$

$$x^3 - 8 > 0$$

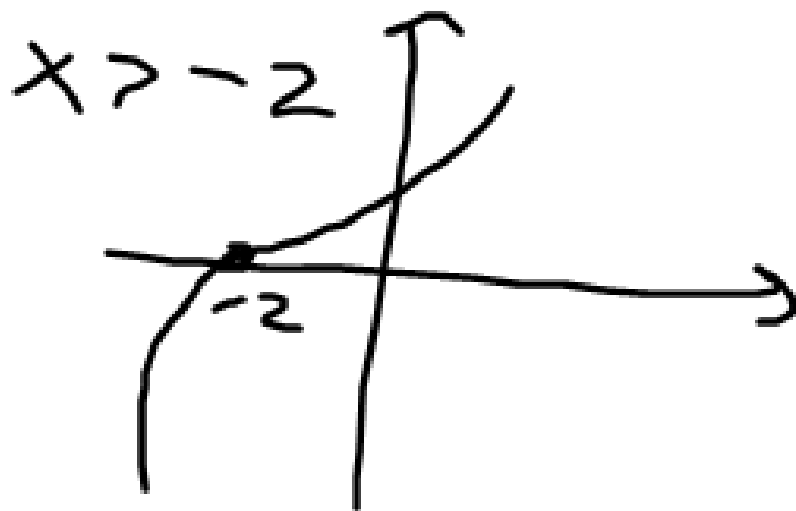
$$x > 2$$



$$x^3 < 8$$

$$x < 2$$

$$x^3 > -8$$



$$x^3 < -8$$

$$x < -2$$

$$|1+2x-|x+2||=x-1$$

$$\begin{cases} x+2 \geq 0 \\ |1+2x-x-2|=x-1 \end{cases}$$

$$\begin{cases} x \geq -2 \\ |x-1|=x-1 \end{cases}$$

①

$$\begin{cases} x+2 < 0 \\ |1+2x+x+2|=x-1 \end{cases}$$

$$\begin{cases} x < -2 \\ |3x+3|=x-1 \end{cases}$$

②

$$|x-1| = x-1$$

$$\begin{cases} x-1 \geq 0 \\ x-1 = x-1 \end{cases}$$

$$\downarrow$$

$$\text{under}$$

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

$$\begin{cases} x \geq 1 \\ \forall x \in \mathbb{R} \end{cases}$$

$$\boxed{x \geq 1}$$

$$\begin{cases} x-1 < 0 \end{cases}$$

$$\begin{cases} -x+1 = x-1 \end{cases}$$

$$\begin{cases} x < 1 \end{cases}$$

$$\begin{cases} x = 1 \text{ none ok} \end{cases}$$



$$S_1: x \geq 1$$

$$|3x+3| = x-1$$

$$\begin{cases} 3x+3 \geq 0 \\ 3x+3 = x-1 \end{cases}$$

$$\begin{cases} x \geq -1 \\ x = -2 \end{cases}$$

$\emptyset$

$$\vee \begin{cases} 3x+3 < 0 \\ -3x-3 = x-1 \end{cases}$$

$$\vee \begin{cases} x < -1 \\ x = -\frac{1}{2} \text{ non ok} \end{cases}$$

$\emptyset$

$$S_2 = \emptyset$$

$$\begin{cases} x \geq -2 \\ x \geq 1 \end{cases}$$

$$x \geq 1$$

$$\vee \begin{cases} x < -2 \\ \exists x \in \mathbb{R} \end{cases}$$

$$\vee \emptyset$$

$$S: x \geq 1$$

N. 385

$$\frac{|x^3 + 3x^2 - x - 3|}{x^3 + 3x^2 - x - 3} = 0 \quad \text{CE} \quad x \neq -1$$

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

$$x^2(x+3) - 1(x+3) = 0$$

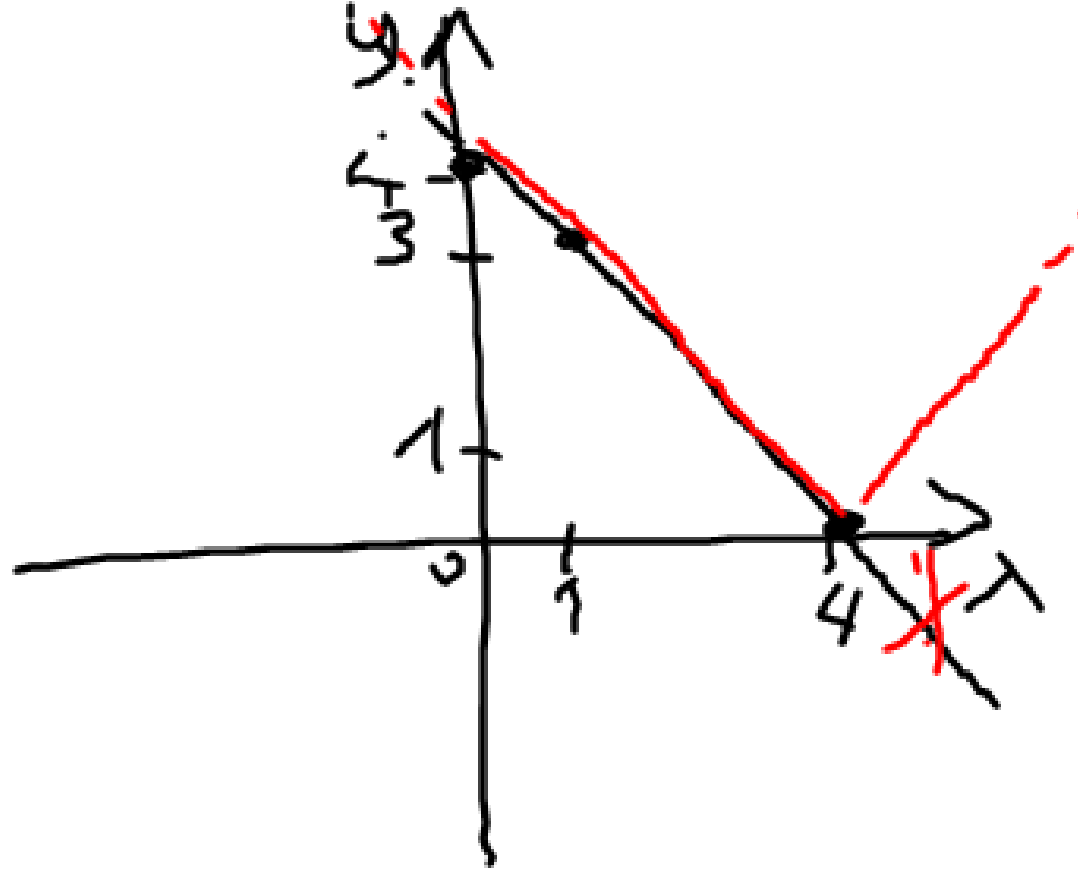
$$(x^2 - 1)(x+3) = 0 \quad \text{LAP}$$

$$x = \pm 1 \vee x = -3$$

$$S: \{1, -3\}$$

x	y
0	4
4	0

$$y = |x - 4|$$



$$|x| > x^2 - 4x + 6$$

DISEQ.
MODULAR

$$\begin{cases} x \geq 0 \\ x > x^2 - 4x + 6 \end{cases}$$

$$\begin{cases} x < 0 \\ -x > x^2 - 4x + 6 \end{cases}$$

$$\begin{cases} x \geq 0 \\ -x^2 + 5x - 6 > 0 \end{cases}$$

$$\begin{cases} x < 0 \\ -x^2 + 3x - 6 > 0 \end{cases}$$

$$\textcircled{1} \begin{cases} x \geq 0 \\ x^2 - 5x + 6 < 0 \end{cases}$$

$$\begin{cases} x < 0 \\ x^2 - 3x + 6 < 0 \\ \forall x \in \mathbb{R} \end{cases}$$

$$\begin{cases} x \geq 0 \\ x^2 - 5x + 6 < 0 \end{cases}$$

$$x^2 - 5x + 6 = 0$$

$$(x-3)(x-2) = 0$$

$$x = 3 \vee x = 2$$

$$S: 2 < x < 3$$



$$\boxed{2 < x < 3}$$

$$S_1: 2 < x < 3 \quad \vee$$

$$S_2 \doteq \emptyset \quad S = \emptyset$$

$$S: 2 < x < 3$$

$$S = \{x \mid x \in \mathbb{R} \wedge 2 < x < 3\}$$

EQUAZIONI MODULARE, PARTE 1

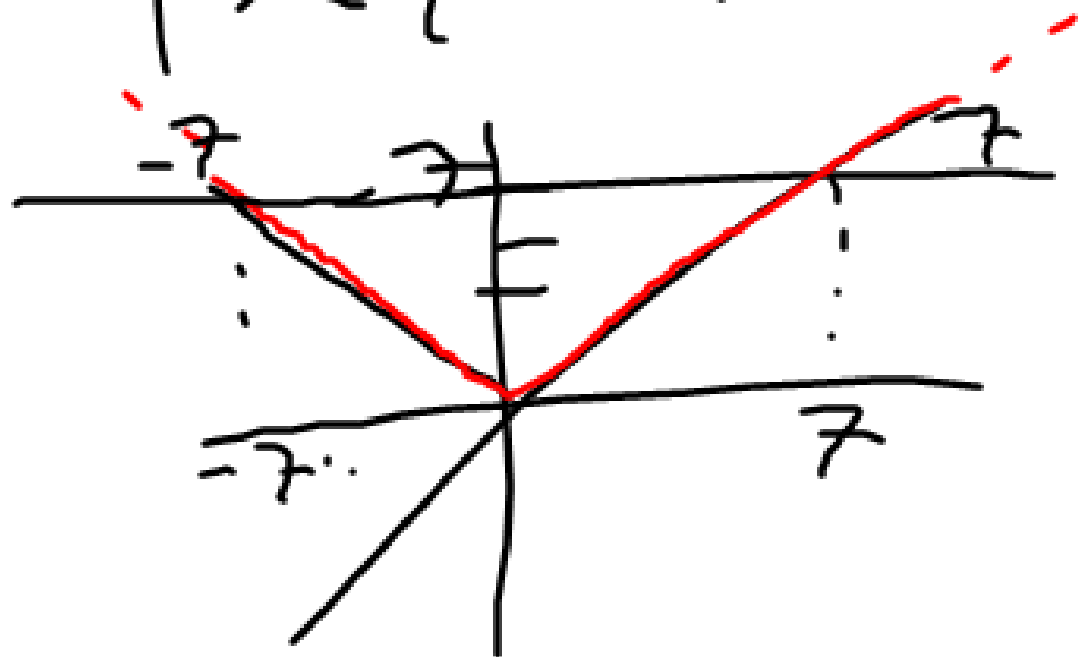
$$\begin{aligned} |A(x)| &= B(x) \\ |x - a| &= x^a \end{aligned}$$

$$\begin{aligned} |A(x)| &= K \\ K &\in \mathbb{R} \end{aligned}$$

1º CASO

$$|A(x)| = K, K > 0$$

$$|x| = 7$$



$$x = \pm 7$$

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

$$1 - 3x = \pm 2$$

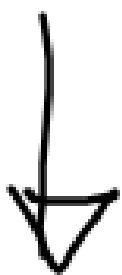
$$1 - 3x = 2$$

$$1 - 3x = -2$$

$$3x = 1 - 2$$

$$3x = -1 \rightarrow x = -\frac{1}{3}$$

$$|A(x)| = K, \quad K > 0$$



$$A(x) = \pm K$$



$$A(x) = +K$$

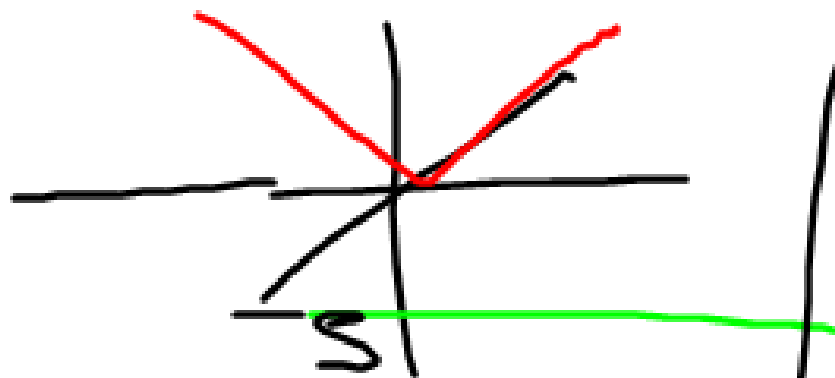
$$A(x) = -K$$

$$2) |A(x)| = 0$$

$$A(x) = 0$$

$$3) |A(x)| = k, \quad k < 0$$

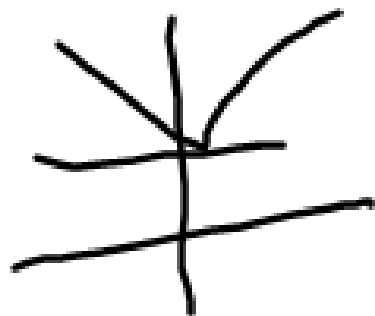
$$|x| = (-5) \quad \nexists x \in \mathbb{R}$$



$$|A(x)| = k, \quad k < 0$$

$$\emptyset$$

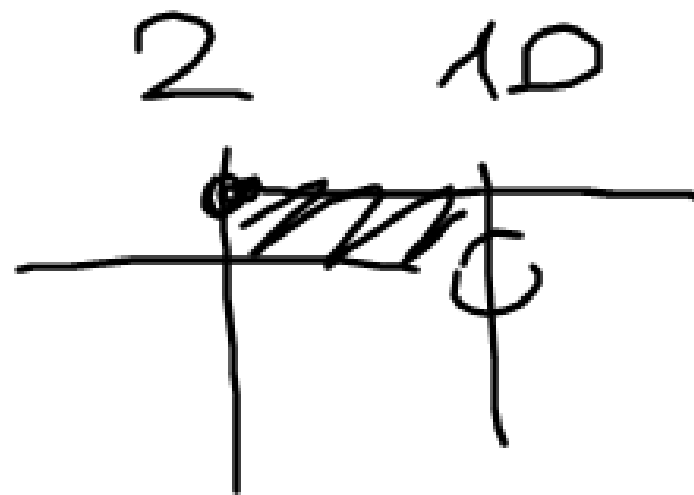
$$\begin{cases} \vartheta = |\kappa| \\ \vartheta = -5 \end{cases}$$



COME SI INTERSECTANO LE SOLUZIONI

$$S_1: x \geq 2 \quad \cap \quad S_2: x < 10$$

$$\begin{cases} x \geq 2 \\ x < 10 \end{cases}$$



$$2 \leq x < 10$$

COME SI UNISCONO PIÙ SOLUZIONI

$$S_1: -7 \leq x < 4$$

$$S_2: 4 \leq x < 10$$

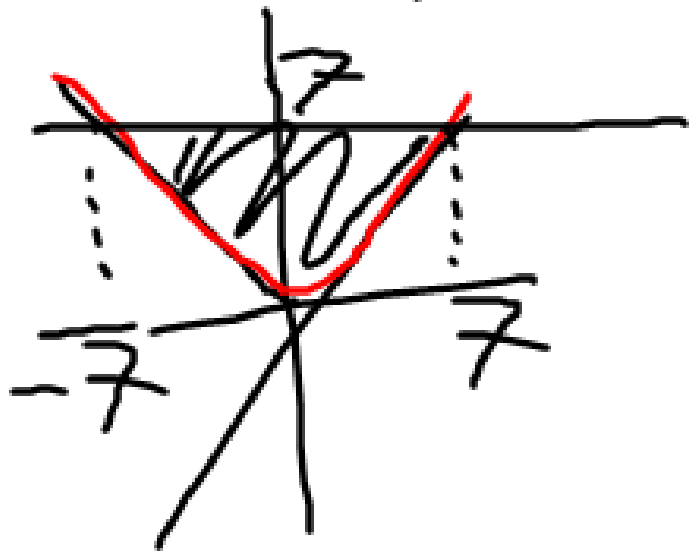
$$S_1 \cup S_2$$



$$S: -7 \leq x < 10$$

DISEQUAZIONI MODULARI PARTICOLARI

$$|x| < 7$$



$$-7 < x < 7$$

$$|A(x)| \geq B(x)$$

$$\left\{ \begin{array}{l} A(x) \geq 0 \\ A(x) < 0 \end{array} \right\} \begin{array}{l} \vee \\ \wedge \end{array} \left\{ \begin{array}{l} A(x) \geq B(x) \\ A(x) < B(x) \end{array} \right\}$$

$$-A(x) \geq B(x)$$

$$|1-3x| < 7$$

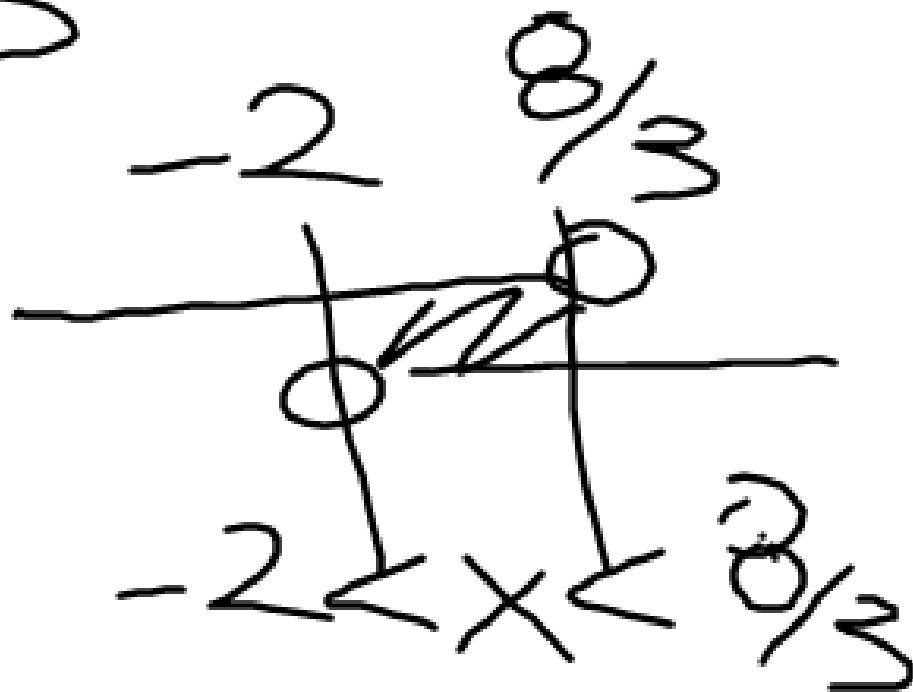
$$-7 < 1-3x < 7$$

$$\begin{array}{l} \textcircled{1} \left\{ \begin{array}{l} 1-3x > -7 \\ 1-3x < 7 \end{array} \right. \left| \begin{array}{l} -3x > -6 \\ -3x < 6 \end{array} \right. \end{array}$$

$$\begin{cases} 3x < 6 \end{cases}$$

$$\begin{cases} 3x > -6 \end{cases}$$

$$\begin{cases} x < 2 \\ x > -2 \end{cases}$$



$$|A(x)| < K, \quad K \geq 0$$

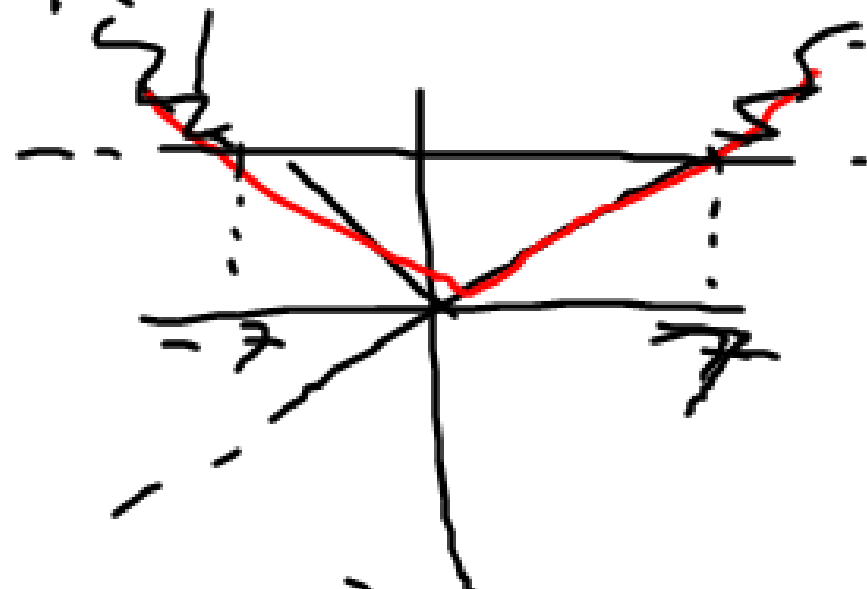
$$-K < A(x) < +K$$

$$\begin{cases} A(x) > -K \\ A(x) < +K \end{cases}$$

$$1^{\circ}) \quad |A(x)| < k, \quad k > 0$$

$$2^{\circ}) \quad |A(x)| > k, \quad k > 0$$

$$|x| > \tau$$



$$S: x < -\tau \vee x > \tau$$

$$|x^2 - 4| > 1$$

$$x^2 - 4 < -1 \vee x^2 - 4 > 1$$

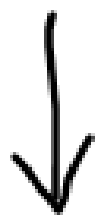
$$x^2 < 3 \vee x^2 - 4 = 1$$

$$x^2 - 3 = 0 \vee x^2 = 5$$

$$x^2 = 3 \vee x = \pm \sqrt{5}$$

$$x = \pm \sqrt{3}$$

$$|A(x)| \geq K, \quad K > 0$$



$$A(x) < -K \vee A(x) > K$$

$$3) \Rightarrow K < 0$$

$$|x-4| > -2 \quad \forall x \in \mathbb{R}$$

$$|x-4| < -2 \quad \nexists x \in \mathbb{R}$$

$$|x-4| \geq -2 \quad \forall x \in \mathbb{R}$$

$$|x-4| \leq -2 \quad \nexists x \in \mathbb{R}$$



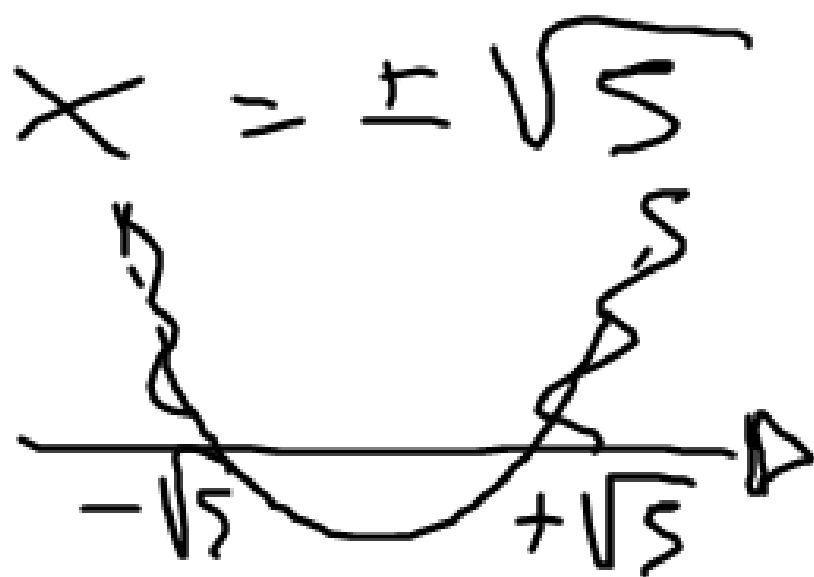
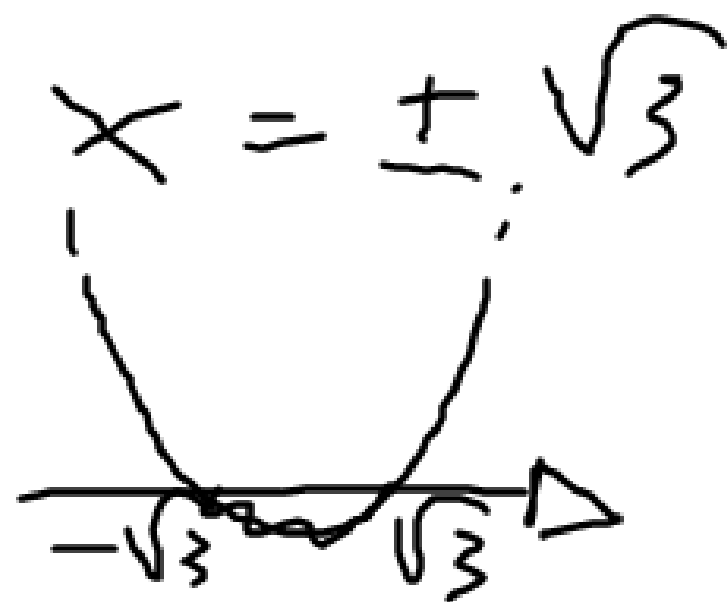
$$4) \quad SE \quad K = 0$$

$$|x - 4| > 0 \quad \forall x \in \mathbb{R} - \{4\}$$

$$\cancel{\therefore |x - 4| < 0 \quad \nexists x \in \mathbb{R}}$$

$$\therefore |x - 4| \geq 0 \quad \forall x \in \mathbb{R}$$

$$|x - 4| \leq 0 \quad x = 4$$



$$-\sqrt{3} < x < \sqrt{3} \vee x \leq -\sqrt{5} \vee x > \sqrt{5}$$

$$-\sqrt{5} \quad -\sqrt{3} \quad \sqrt{3} \quad \sqrt{5}$$

ϕ

ϕ — ϕ

ϕ $x > \sqrt{5}$

$$S: x < -\sqrt{5} \vee -\sqrt{3} < x < \sqrt{3}$$