Inecuații în $\mathbb{R}$

① $\sqrt{x^2-6x+9}+\sqrt{y^2+10x+25} \overset{(1)}{\leq} 0 \Leftrightarrow$

GREȘELI TIPICE:

$\underbrace{5=\sqrt{25}=\sqrt{16+9}}_{\text{CORECT}} \neq \underbrace{\sqrt{16}+\sqrt{9}=4+3=7}_{\text{CORECT}}$

$\sqrt{7}=\sqrt{16-9} \neq \sqrt{16}-\sqrt{9}=4-3=1$

$\sqrt{a \pm b} \neq \sqrt{a} \pm \sqrt{b}$

$\left.\begin{array}{l}\sqrt{a\cdot b}=\sqrt{a}\cdot\sqrt{b} \\ \sqrt{\frac{a}{b}}=\frac{\sqrt{a}}{\sqrt{b}},\ b\neq 0\end{array}\right.$

$a^2 \pm 2ab+b^2=(a\pm b)^2$

$x^2-6x+9=x^2-2\cdot 3\cdot x+3^2=(x-3)^2$

$y^2+10y+25=y^2+2\cdot 5\cdot y+5^2=(y+5)^2$

$\boxed{\sqrt{x^2}=|x|}$

$3=\sqrt{9}=\sqrt{(-3)^2}=|-3|=3$

$(1) \Leftrightarrow \sqrt{(x-3)^2}+\sqrt{(y+5)^2} \leq 0 \Leftrightarrow$

$|x-3|+|y+5| \leq 0$

$|-7|=7>0 \qquad |0|=0 \qquad |9|=9>0$

$(\forall)\ x\in\mathbb{R} \Rightarrow |x|\geq 0$

$|x-3| \geq 0$, $(\forall)\ x \in \mathbb{R}$

$|y+5| \geq 0$, $(\forall)\ y \in \mathbb{R}$

$|x-3| + |y+5| \leq 0$

POSIBIL DOAR DACĂ

$|x-3| = 0$ și $|y+5| = 0$

$x-3=0$ $\quad$ $y+5=0$

$x=3$ $\quad$ $y=-5$

$S = \{(3;-5)\}$ $\quad$ $x=3$ și $y=-5$

$\sqrt{x^2-4x+4} + \sqrt{y^2} \leq 0 \Leftrightarrow$

$\sqrt{x^2-2\cdot 2x+2^2} + |y| \leq 0 \Leftrightarrow$

$\sqrt{(x-2)^2} + |y| \leq 0 \Leftrightarrow |x-2| + |y| \leq 0$

$|x-2| \geq 0$

$|y| \geq 0$

$\Leftrightarrow |x-2| = 0$ și $|y| = 0$

$x-2=0$ $\quad$ $y=0$

$x=2$ $\quad$ $y=0$

$\Rightarrow \begin{cases} x=2 \\ y=0 \end{cases}$

$S = \{(2,0)\}$

$\frac{3(x-1)-2\cdot(x+3)}{-6} < 5 \Leftrightarrow$

$\frac{3x-3-2x-6}{-6} < 5 \Leftrightarrow$

$\frac{x-9}{-6} < 5 \mid \cdot(-6) \Leftrightarrow \frac{x-9}{>6} \cdot (-6) > 5 \cdot (-6)$

$x - 9 > -30 \Leftrightarrow x \geq -30 + 9 \Leftrightarrow x \geq -21$

$S = [-21, +\infty)$

$+ \cdot - = -$

$+ \cdot + = +$

$2 \cdot x^3 - x^2 \geq 0 \Leftrightarrow x^2 \cdot (2x - 1) \geq 0 \Rightarrow$

$x^2 \geq 0, (\forall) x \in \mathbb{R}$ $\quad \underbrace{+ \cdot ?}_{+}$

$\Rightarrow 2x - 1 \geq 0 \Leftrightarrow 2x \geq 1 \Leftrightarrow x \geq \frac{1}{2} \Rightarrow$

$S = [\frac{1}{2}, +\infty)$

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