PAG. 67 N 806

$$\sqrt{x^2-2x} - 2 \geq x+1$$

$$\sqrt{x^2-2x} \geq x+3$$

$$\sqrt{f(x)} \geq g(x)$$

$$\begin{cases} g(x)<0 \\ f(x)\geq 0 \end{cases} \vee \begin{cases} g(x)\geq 0 \\ f(x)\geq g^2(x) \end{cases}$$

$$\begin{cases} x+3<0 \\ x^2-2x\geq 0 \end{cases} \vee \begin{cases} x+3\geq 0 \\ x^2-2x \geq x^2+6x+9 \end{cases}$$

$$\begin{cases} x<-3 \\ x\leq 0 \vee x\geq 2 \end{cases} \vee \begin{cases} x\geq -3 \\ x\leq -\frac{9}{8} \end{cases}$$

$$\Downarrow \quad x<-3 \qquad \Downarrow \quad -3\leq x\leq -\frac{9}{8}$$

$$\Rightarrow \boxed{x\leq -\frac{9}{8}}$$

812

$x \leqslant -1 + \sqrt{1+2x}$

$\sqrt{1+2x} \geqslant x+1$

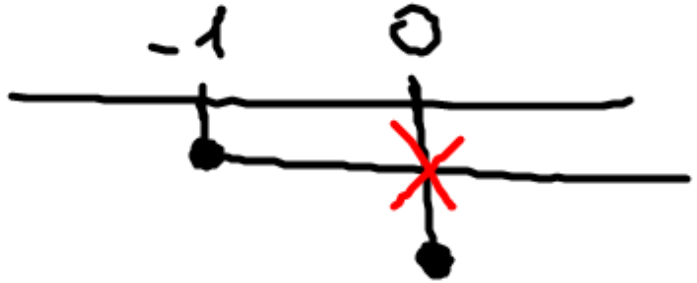
$x+1 \leqslant \sqrt{1+2x}$

$$\begin{cases} x+1<0 \\ 1+2x \geqslant 0 \end{cases} \vee \begin{cases} x+1 \geqslant 0 \\ 1+2x \geqslant x^2+2x+1 \end{cases}$$

$$\begin{cases} x<-1 \\ x \geqslant -\frac{1}{2} \end{cases} \vee \begin{cases} x \geqslant -1 \\ x^2 \leqslant 0 \end{cases}$$

$\varnothing$

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



$x=0$

813

$$\sqrt{x(x-4)+4} > 2x+1$$

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

$$\begin{cases} x < -\frac{1}{2} \\ (x-2)^2 \geq 0 \end{cases} \vee \begin{cases} x \geq -\frac{1}{2} \\ -3x^2-8x+3>0 \\ 3x^2+8x-3<0 \end{cases}$$

$\forall x$

$\Downarrow$

$x < -\frac{1}{2}$

$-3 < x < \frac{1}{3}$

$\Downarrow$

$-\frac{1}{2} \leq x < \frac{1}{3}$

$\vee$

$x < \frac{1}{3}$

$\frac{\Delta}{4} = 16+9=25$

$x = \frac{-4 \pm 5}{3}$

$= < \frac{-3}{\frac{1}{3}}$

795

$$2\sqrt{x^2-5x+7} \leqslant 2x-4$$

$$\sqrt{x^2-5x+7} \leqslant x-2$$

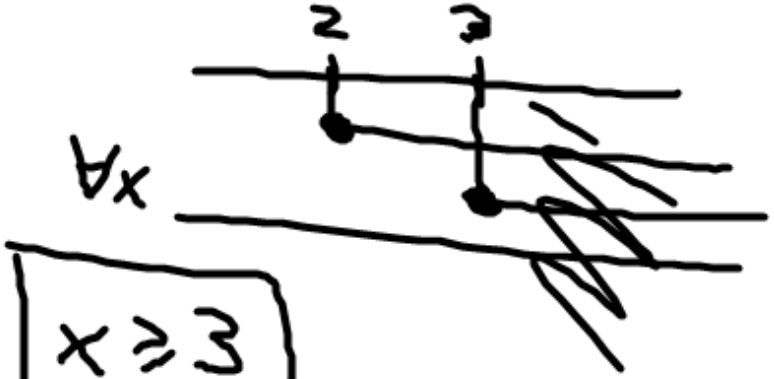
$$\sqrt{f(x)} \leq g(x)$$

$$\begin{cases} g(x) \geq 0 \\ f(x) \geqslant 0 \\ f(x) \leq g^2(x) \end{cases}$$

$$\begin{cases} x-2 \geqslant 0 \\ x^2-5x+7 \geqslant 0 \\ x^2-5x+7 \leqslant x^2+4-4x \end{cases}$$

$\Delta < 0$

$$\begin{cases} x \geqslant 2 \\ \forall x \\ -x \leqslant -3 \end{cases} \qquad \begin{cases} x \geqslant 2 \\ \forall x \\ x \geqslant 3 \end{cases}$$

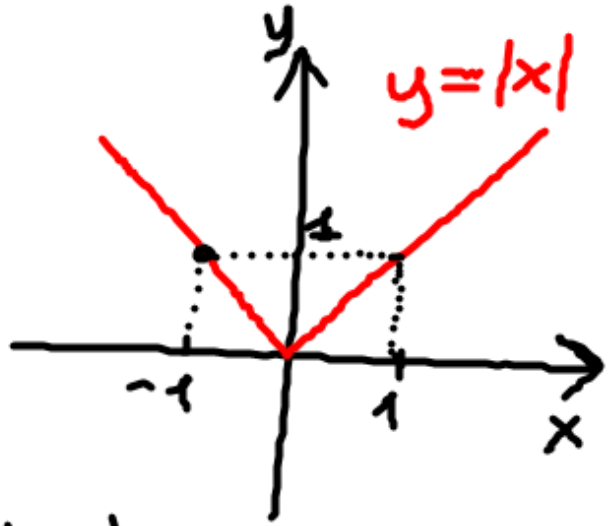


$x \geqslant 3$

RICHIAMO

$$|x| = \begin{cases} x & \text{se } x \geq 0 \\ -x & \text{se } x < 0 \end{cases}$$

VALORE ASSOLUTO O MODULO



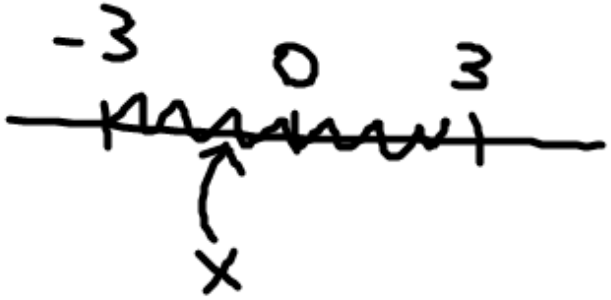
$|-1| = -(-1) = 1$

$|f(x)| < k \qquad k \in \mathbb{R}$

$\Updownarrow$

$-k < f(x) < k$

$|x| < 3$



$$|x+1| < 5$$

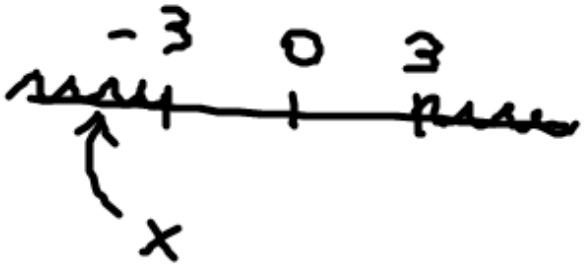
$$-5 < x+1 < 5 \Rightarrow \begin{cases} x+1 < 5 \\ x+1 > -5 \end{cases} \quad \begin{cases} x < 4 \\ x > -6 \end{cases}$$

$$-6 < x < 4$$

$$|f(x)| > k \qquad k \in \mathbb{R}$$

$$f(x) < -k \ \vee \ f(x) > k$$

$$|x| > 3$$



$|x+1| > 5$

$x+1 < -5 \quad \vee \quad x+1 > 5$

$\boxed{x < -6 \quad \vee \quad x > 4}$

$(-\infty, -6) \cup (4, +\infty)$

$1 < x \leq 2$

$(1, 2]$

$]1, 2]$

$1 < x < 2$

$(1, 2)$

$]1, 2[$

PAG. 61 N 654

$$|x^2-10x|-6>x-x^2$$

$$|x^2-10x|>x-x^2+6$$

$x^2-10x<-(x-x^2+6)$ V $x^2-10x>x-x^2+6$

$x^2-10x<-x+x^2-6$

$-9x<-6$

$x>\frac{2}{3}$

$2x^2-11x-6>0$

$\Delta=121+48=13^2$

$x=\frac{11\pm13}{4}=\begin{cases}-\frac{1}{2}\\6\end{cases}$

$x<-\frac{1}{2}$ V $x>6$

$$x<-\frac{1}{2} \vee x>\frac{2}{3}$$