یکتا بلوری

مقطع: دهم یازدهم A

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① $f(x)=\sqrt{1-x^2}$ $\quad g=\{(-1,1)(0,4)(2,0)(1,2)\}$

$f \to -1\le x\le 1 \to \{(-1,0)(0,1)(1,0)\} \to 3f \Rightarrow \{(-1,0)(0,3)(1,0)\}$

$2g=\{(-1,2)(0,8)(2,0)(1,4)\}$

$2g-3f=\{(-1,2),(0,5),(1,4)\}$

مجموع اعضای برد: $2+5+4=11 \longleftarrow$

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② $f(x)=2x-1$ $\quad D_f=(3,+\infty)$

x	3	4
y	5	7

$R=[5,+\infty)$

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$g(x)=\frac{1}{3}x+3$ $\quad D_g=(-\infty,3]$

x	3	2	1
y	4	$\frac{11}{3}$	$\frac{10}{3}$

$R=\mathbb{R}-(4,5)$

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③ $y=\frac{-x^2}{2}+x+3$

$\to \frac{-x^2}{2}+x+3>\frac{3}{2} \to -x^2+2x+6>3$

$0>x^2-2x-3$

-1 3

+ | - | +

$(-1,3)$ a b

$\sqrt{b-a}=2$

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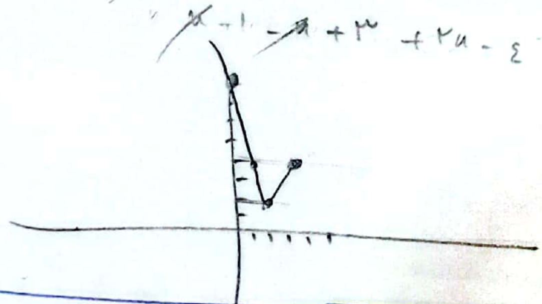
④ $y=|x-1|+|x-3|+|2x-4|$ ① ③ ②

$\cancel{x}-1 \quad -\cancel{x}+3 \quad +2x-4$



	1		2		3	
$-4x+8$		$-2x+6$		$2x-2$		$4x-8$

$\cancel{x}-1-\cancel{x}+3-2x+4$

کمترین مقدار $=2$

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⑤ $y=|x|-2|x+1|$

$x<-1$: $-x-2(-x-1)\to -x+2x+2 \to x+2$

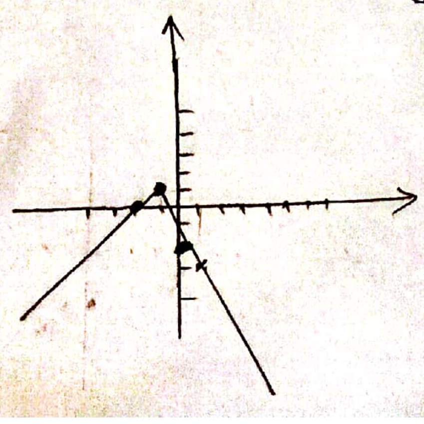
x	-1	-2
y	1	0

$-1\le x\le 0$: $-x-2x-2 \to -3x-2$

x	-1	0
y	1	-2

$x>0$: $x-2x-2 \to -x-2$

x	0	1
y	-2	-3



$R=(-\infty,1]$

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$$y=\frac{x^2+5x+m}{x+1} \rightarrow yx+y=x^2+5x+m \rightarrow x^2+x(5-y)+m-y$$

$$x=\frac{y-5\pm\sqrt{y^2+25-10y-4(m-y)}}{2} \rightarrow y^2-6y+25-4m\geq 0 \rightarrow \Delta\leq 0$$

$$36-4(25-4m)\leq 0 \rightarrow 16m\leq 64 \rightarrow m\leq 4$$

$$m=\{2,4,3,1\}$$

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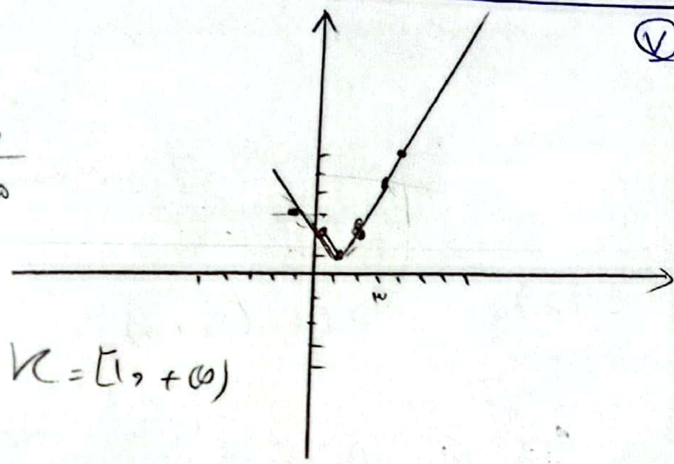
$$f(x)=\begin{cases} x+2 & x\geq 3 \\ x^2-2x+2 & 0\leq x<3 \\ |x|+2 & x<0 \end{cases}$$

x	3	4
y	5	6

x	0	1	2	3
y	2	1	2	5

x	0	−1
y	2	3



$R=[1,+\infty)$

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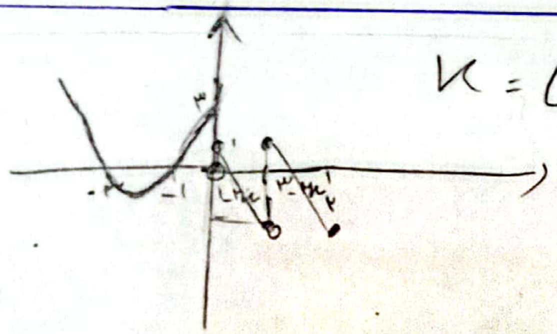
$$f(x)=\begin{cases} x^2+4x+3 & x\leq 0 \\ [2x]-2x & x>0 \end{cases}$$



$R=[-1,+\infty)$

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$$y=a+1-\sqrt{2x+3} \qquad D=[b,+\infty) \qquad R=(-\infty,5]$$

$$2x+3\geq 0 \rightarrow 2x\geq -3 \rightarrow x\geq -1/5$$

$\boxed{b=-1/5}$ $\quad a=4 \quad ab=-6$

در ازای $x=-1/5$ رادیکال ۰ می‌شود و $(a+1)$ می‌ماند و ماکسیمم برابر ۵ است پس $a=4$

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$$f(x)=2\sqrt{x+1}+4\sqrt{1-x} \qquad f(x)+g(x)=3\sqrt{2+2\sqrt{1-x^2}} \qquad D_f=D_g$$

$$y=\frac{f(x)}{6}-\frac{g(x)}{3}$$

$$=\frac{1}{2}f(x)-\sqrt{2+2\sqrt{1-x^2}}$$

$$g(x)=3\sqrt{2+2\sqrt{1-x^2}}-f(x) \qquad y=\frac{f(x)}{6}-\sqrt{2+2\sqrt{1-x^2}}+\frac{f(x)}{3}$$

$$\rightarrow \frac{1}{2}\left(2\sqrt{x+1}+4\sqrt{1-x}\right)-\sqrt{2+2\sqrt{1-x^2}}$$

$$y=\sqrt{x+1}+2\sqrt{1-x}-\sqrt{2+2\sqrt{1-x^2}}$$

$$-1\leq x\leq 1$$

$x=1 \xrightarrow{y} 0$

$x=-1 \rightarrow \sqrt{2}$

$x=0 \rightarrow 1$

$$R=[0,+\sqrt{2}]$$