نام و نام خانوادگی ......سهیل بهرامی........ پاسخنامه تشریحی تکلیف شماره ..۸... کلاس ...یازدهم B........

۱

$f(x)=\sqrt{1-x^2} \rightarrow 1-x^2 \geq 0 \Rightarrow x^2 \leq 1 \Rightarrow -1 \leq x \leq 1 \Rightarrow D_f=[-1,1]$

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

$\xrightarrow{\cap} \{-1,0,1\}$

$f(1)=0 \ , \ g(1)=2 \Rightarrow (2g-3f)(1)=4$

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

$f(-1)=0 \ , \ g(-1)=1 \Rightarrow (2g-3f)(-1)=2$

$\Rightarrow 2g-3f = 2+4+5=11$

$\{2,4,5\}$

۲

$f(x)=2x-1$, $D_f=[3,+\infty) \Longrightarrow R_f=[5,+\infty)$

$g(x)=\frac{1}{3}x+3$, $D_g=(-\infty,3] \Longrightarrow R_g=(-\infty,4]$

$\xrightarrow{\cup} (-\infty,4]\cup[5,+\infty)$

۳

$y=\frac{-x^2}{2}+x+3$

$(a,b) \rightarrow (I)$

$\frac{-x^2}{2}+x+3 > \frac{3}{2} \Rightarrow \frac{-x^2}{2}+x+\frac{3}{2} > 0$

$\xrightarrow{\times 2} -x^2+2x+3>0 \Rightarrow (x+1)(-x+3)>0$

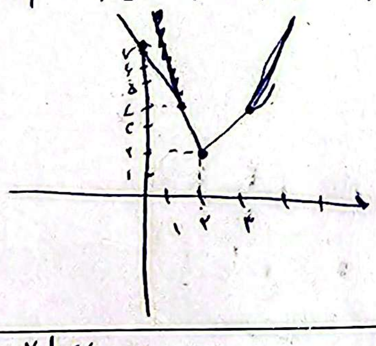
-1		3	
$-$	$+$		$-$

$(-1,3)$

$\Rightarrow a=-1 \ , \ b=3 \qquad \sqrt{b-a}=\sqrt{3-(-1)}=\sqrt{4}=2$

۴

$y=|x-1|+|x-3|+|2x-4|$

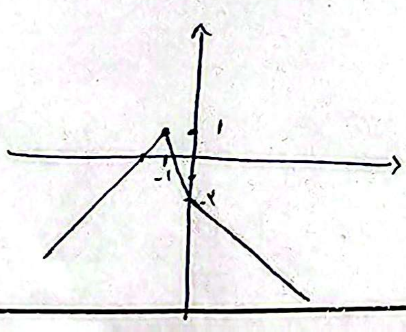


	1	2	3
$-x+1-x+3-2x+4$	$x-1-x+3-2x+4$	$x-1-x+3+2x-4$	$x-1+x-3+2x-4$
$-4x+8$	$-2x+6$	$2x-2$	$4x-8$
	4	2	4

کمترین مقدار $=2$

۵

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



	-1	0
$-x+2x+2$	$-x-2x-2$	$x-2x-2$
$x+2$	$-3x-2$	$-x-2$
	1	-2

$R_y=(-\infty,1]$

$y=\frac{x^2+5x+m}{x+1} \Rightarrow xy+y=x^2+5x+m \Rightarrow x^2+(5-y)x+(m-y)=0$

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

$\Rightarrow 36-100+16m\leq 0 \Rightarrow 16m-64\leq 0$ ۶

$\left.\begin{array}{l}\Rightarrow m\leq 4\\ m\in\mathbb{N}\end{array}\right\} \Rightarrow m=\{1,2,3,4\}$

۴ مقدار طبیعی برای m وجود دارد

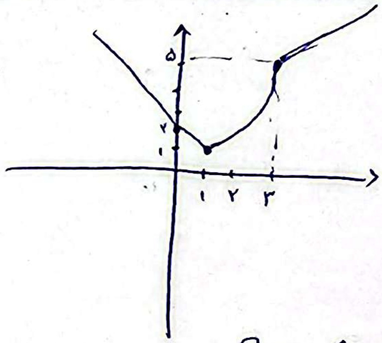
$f(x)=\begin{cases} x+2 & ; x\geq 3 \\ x^2-2x+2 & ; 0\leq x<3 \\ |x|+2 & ; x<0 \end{cases}$

$x=3 \Rightarrow y=5$

$x=0 \Rightarrow y=2$

$x=3 \Rightarrow y=5$

$x=0 \Rightarrow y=2$



$y=x^2-2x+2 \Rightarrow x_s=\frac{-b}{2a}=-\frac{-2}{2}=1$ ۷

$y_s=1-2+2=1$

$R_f=[1,+\infty)$

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

$\xRightarrow{2x=a} y_2=[a]-a \Rightarrow R_{y_2}=(-1,0]$

$\left.\begin{array}{l}y_1=x^2+4x+3 \Rightarrow x_s=\frac{-b}{2a}=-\frac{4}{2}=-2\\ \quad y_s=4-8+3=-1\end{array}\right\} \Rightarrow \left.\begin{array}{l}y_1=x^2+4x+3\\ ext\,|^{-2}_{-1}\end{array}\right\} \xRightarrow{a>0} R_{y_1}=[-1,+\infty)$ ۸

$\xRightarrow{\cup} R_f=[-1,+\infty)$

$y=a+1-\sqrt{2x+3} \Rightarrow 2x+3\geq 0 \Rightarrow x\geq -\frac{3}{2} \Rightarrow D_y=[-\frac{3}{2},+\infty)$

$D_y=[b,+\infty) \rightarrow b=-\frac{3}{2}$

$R_y=(-\infty,5]$ ۹

$-\infty<a+1-\sqrt{2x+3}\leq a+1$

$ab=4\times -\frac{3}{2}=-6$ $\quad R_y=(-\infty,a+1] \Rightarrow a+1=5 \Rightarrow a=4$

$x+1\geq 0 \Rightarrow x\geq -1$ $\quad 1-x\geq 0 \Rightarrow x\leq 1$

$f(x)=2\sqrt{x+1}+4\sqrt{1-x} \Rightarrow D_f=[-1,1]=D_g=D_y$

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

$y=\frac{f(x)}{6}-\frac{g(x)}{3}=\frac{2\sqrt{x+1}+4\sqrt{1-x}}{6}-\frac{3\sqrt{2+2\sqrt{1-x^2}}-2\sqrt{x+1}-4\sqrt{1-x}}{3}=\frac{\sqrt{x+1}}{3}+\frac{2\sqrt{1-x}}{3}+\frac{2\sqrt{x+1}}{3}+\frac{4\sqrt{1-x}}{3}$ ۱۰

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

$\left.\begin{array}{l}=2\sqrt{1-x}-\sqrt{1-x}=\sqrt{1-x}\\ D_y=[-1,1]\end{array}\right\} \Rightarrow R_y=[0,\sqrt{2}]$