یازدهم دختران / الف ۸ — ۲۰ — [illegible]

(1 ۲

$f(x)=\sqrt{1-x^2}$ $\quad \begin{matrix} -1 & 1 \\ -+ & +- \end{matrix}$ $\quad D_f=[-1,1]$ $\quad f=\{(-1,0)(1,0)(0,1)\}$

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

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

$2g-3f=\{(-1,2)(0,5)(1,4)\} \longrightarrow 2+5+4=\boxed{11}$

(2 ۲

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

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

$R_f \cup R_g=\boxed{(-\infty,4]\cup[5,+\infty)}$

(3 ۲

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

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

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

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

$-(x+1)(x-3)>0$

$-1 \quad 3$

	-1		3	
−		+		−

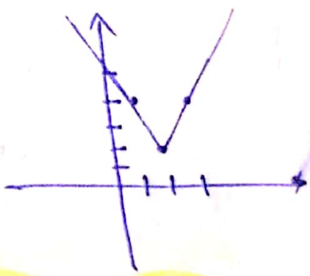
$D_f=(-1,3)$

$\sqrt{b-a}=\sqrt{4}=\boxed{2}$

(4 ۲

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

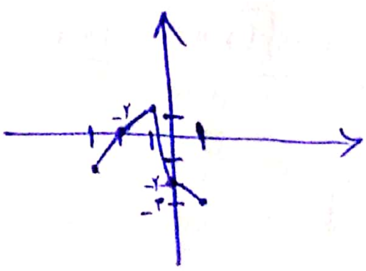
	1		2		3	
$-4x+8$	4	$-2x+6$	2	$2x-2$	4	$4x-8$



min |2

(5 ۲

$y=\left||x|-2|x+1|\right|$



$$\rightarrow \begin{cases} x\geq 0 & x-2x-2 \rightarrow -x-2 \\ -1\leq x<0 & -x-2x-2 \rightarrow -4x-2 \\ x<-1 & -x+2x+2 \rightarrow x+2 \end{cases}$$

$R_f=(-\infty,1]$

(6 ۲

$$y=\frac{x^2+5x+m}{x+1} \to yx+y=x^2+5x+m$$

$$x^2+(5-y)x+(m-y)=0 \quad , a\geq 0 \ , \Delta\geq 0$$

$$\frac{y-5\pm\sqrt{(5-y)^2-4(m-y)}}{2} \rightsquigarrow y^2+25-10y+4y-4m\geq 0$$

$$y^2-6y+25-4m\geq 0 \qquad m=\{1,2,3\}$$

$$a>0 \ . \ \Delta<0$$

$$\Delta=36-100+16m<0$$

$$m<4$$

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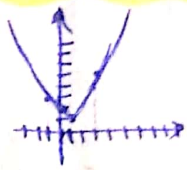
(7 ۲

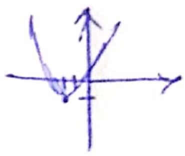
$$f(x)=\begin{cases} x+2 & x\geq 3 \longrightarrow |^{5}_{\ } \\ x^2-2x+2 & 0\leq x<3 \\ |x|+2 & x<0 \longrightarrow |^{-1}_{3} \end{cases}$$



$$R_f=\boxed{[1,+\infty)}$$

(8 ۲

$$f(x)=\begin{cases} x^2+4x+3 & x\leq 0 \longrightarrow \left| \frac{-b}{2a}=-2 \atop -1 \right. \to R_f=[-1,+\infty) \\ [2x]-2x & x>0 \longrightarrow R_{f'}=(-1,0] \end{cases}$$



$$R_f \cup R_{f'}=(-1,0]\cup[-1,+\infty)=\boxed{[-1,+\infty)}$$

(9 ۲

$$y=a+1-\sqrt{2x+3}$$

$$D_f \to 2x+3\geq 0$$
$$x\geq -\frac{3}{2}$$

$$R_f=[5,+\infty)$$

$$y_{min}=5$$

$$b=-\frac{3}{2} \qquad 5=a+1-\underset{\text{min مقدار}}{0} \to a=4 \qquad ab=\left(-\frac{3}{2}\right)\times 4=\boxed{-6}$$

(10 ۴

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

$$D_f=D_g=[-1,1] \qquad g(x)=3\sqrt{1-x}+3\sqrt{1+x}-2\sqrt{1+x}-4\sqrt{1-x}=\sqrt{1+x}-\sqrt{1-x}$$

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

$$\frac{\cancel{3}\sqrt{-x+1}}{\cancel{4}} \longrightarrow x=-1 \rightsquigarrow y=\sqrt{2} \qquad R_f=[0,\sqrt{2}]$$

$$\longrightarrow x=1 \rightsquigarrow y=0$$