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

$D_f = 1-x^2 \geq 0$

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

$1 \geq x^2 \to 1 \geq x \geq -1 \to D_f \cap D_g = \{1,-1,0\}$

$2g-3f=\{(1,8),(-1,4),(0,13)\}$ $\quad R_{2g-3f}=\{8,4,13\}$

$f(x)=2x-1$ $\quad g(x)=\frac{1}{2}x+3$ $\quad R_{f\cup g}=[5,+\infty)\cup(-\infty,4)$ — 2

$R_f=[5,+\infty)$ $\quad R_g=(-\infty,4]$

$y=\frac{-x^2}{2}+x+3$ $\quad \frac{-x^2}{2}+x+3>\frac{3}{2} \to -\frac{x^2}{2}+x+\frac{3}{2}>0 \longrightarrow \begin{matrix} x_1=-1 \\ x_2=3 \end{matrix}$ — 3

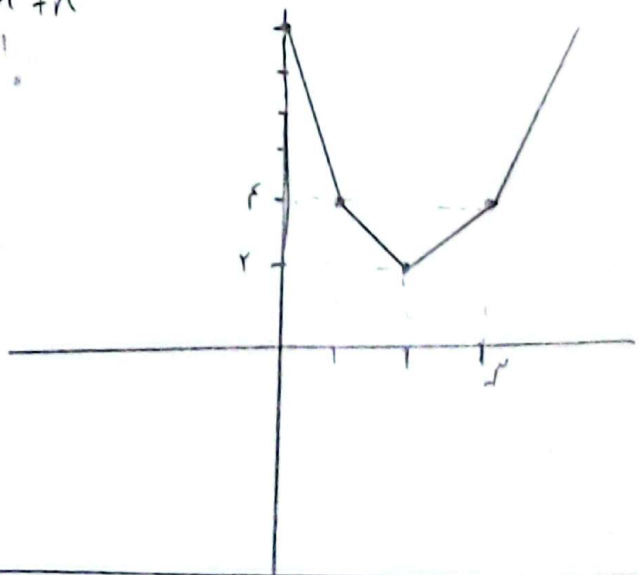
$(-1,3)$ $\quad \sqrt{3+1}=2$

$y=|x-1|+|x-3|+|2x-4|$ — 4

$\boxed{y_{min}=2}$

$\boxed{x_{min}=2}$

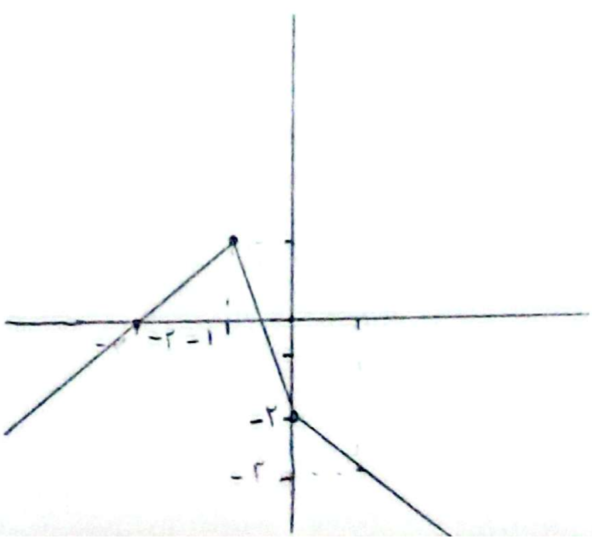
	1	2	3	
$\underbrace{-x+1-x+3-2x+4}_{-4x+8}$	$\underbrace{x-1-x+3-2x+4}_{-2x+6}$	$\underbrace{x-1-x+3+2x-4}_{2x-2}$	$\underbrace{x-1+x-3+2x-4}_{4x-8}$	



$y=|x|-2|x+1|$ — 5

$R_f=(-\infty,1]$

-1		0	
$\underbrace{-x+2x+2}_{x+2}$	$\underbrace{-x-2x-2}_{-3x-2}$	$\underbrace{x-2x-2}_{-x-2}$	



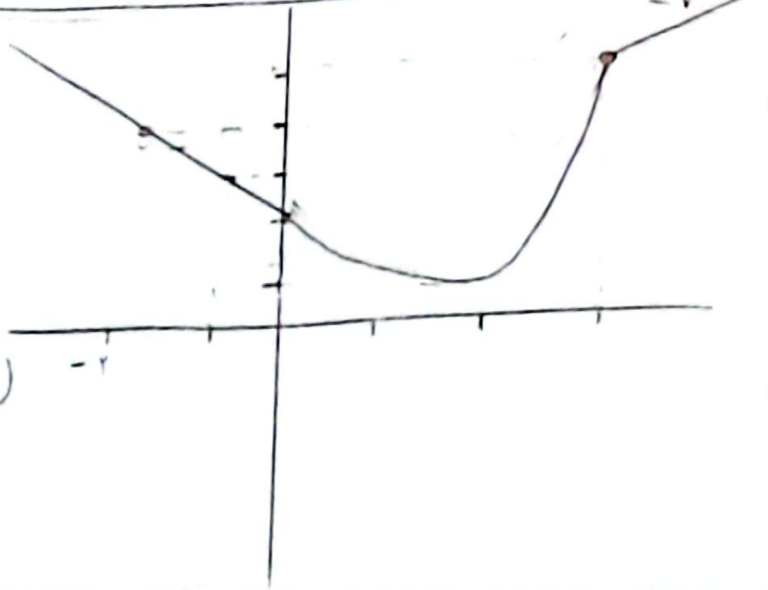
$$\frac{x^۲+۵x+m}{x+۱}=y \qquad yx+y=x^۲+۵x+m \rightarrow x^۲+(۵-y)x+m-y$$ ۷-

$$\Delta = y^۲-۶y+۲۵-۴m \qquad m-۴=۰$$

قبول $\leftarrow m=۴$

۲-

$$f(x)\begin{cases} x+۲ & x\geq ۲ \\ x^۲-۳x+۴ & ۰<x<۲ \\ |x|+۲ & x<۰ \end{cases}$$



$\frac{۱}{۱}=۱$

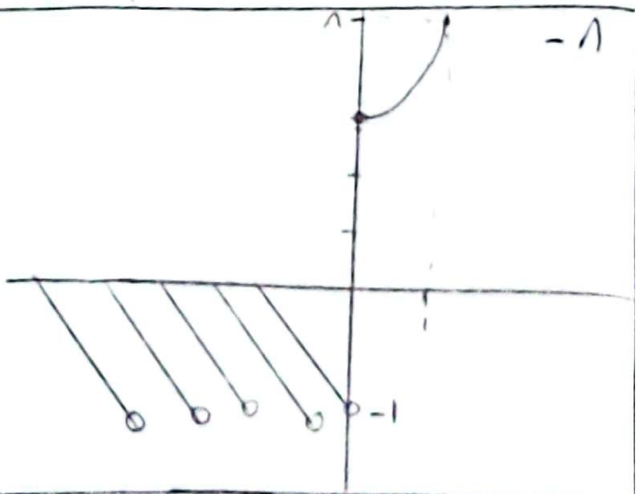
$۱-۲+۲=۱ \qquad R=[۱,+\infty)$

۸-

$$f(x)\begin{cases} x^۲+۴x+۳ & x\leq ۰ \\ [۲x]-۲x \quad x>۰ & x>۰ \end{cases}$$

$۱+۰+۰ \quad ۱$

$(-۱,۰]\cup[۳,+\infty)$



۹-

$y=a+۱-\sqrt{۲x+۳} \qquad ۲x+۳\geq ۰ \qquad \boxed{x\geq -\frac{۳}{۲}} \qquad \boxed{b=-\frac{۳}{۲}}$

$۲x\geq -۳$

$۰=a+۱-\sqrt{-۳+۳} \qquad \boxed{a=۴}$

$۴\times -\frac{۳}{۲}=\boxed{-۶}$

۱۰-

$\mathrm{I} \quad x+۱\geq ۰ \rightarrow \boxed{x\geq -۱} \qquad \mathrm{I}\cap\mathrm{II}\rightarrow[-۱,۱] \qquad f(x)=۲\sqrt{x+۱}+۴\sqrt{۱-x}$

$\mathrm{II} \quad ۱-x\geq ۰ \rightarrow ۱\geq x$

$f(x)+g(x)=۳\sqrt{۲+۲\sqrt{۱-x^۲}}$

$۲\sqrt{x+۱}+۴\sqrt{۱-x}+g(x)=۳\sqrt{۲+۲\sqrt{۱-x^۲}}$

$g(x)=۳\sqrt{۲+۲\sqrt{۱-x^۲}}-۲\sqrt{x+}+۴\sqrt{۱-x}$

$y=\sqrt{x+۱}+۲\sqrt{۱-x}-\sqrt{۲}\sqrt{۱+\sqrt{(۱-x)(۱+x)}}$

$g(-۱)=\sqrt{۲} \qquad [۰,\sqrt{۲}]$

$y(۱)=۰$