نام و نام خانوادگی: آیلین عقیلی — تعقیب: ۸ — کلاس: تجربی یازدهم ریاضی

۱

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

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

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

$3f=3\sqrt{1-x^2} \rightarrow D_f: 1-x^2\geq 0$

$x^2\leq 1 \rightarrow -1\leq x\leq 1$

$f(-1)=0$

$f(0)=3$

$f(1)=0$

$D_{2f\cap 3f}=\{-1,0,1\}$

$\Rightarrow 2g-3f:$

$\{(-1,2)(0,8)(1,4)\}-\{(-1,0)(0,3)(1,0)\}$

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

$R=\{2,5,4\} \rightarrow 2+5+4=11$

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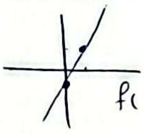
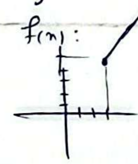
$f(x)=2x-1 \rightarrow D_f:[3,+\infty) \rightarrow f(x):$



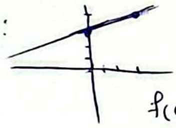
$f(3)=5$



$R_f:[5,+\infty)$

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

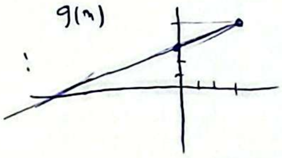
$g(x):$



$f(3)=4$

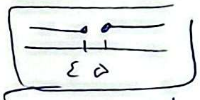
$f(0)=3$

$\rightarrow g(x)$



$R_g:(-\infty,4]$

$R_f\cup R_g:$



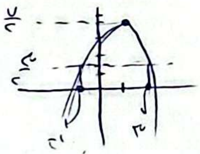
$\boxed{\mathbb{R}-(4,5)}$

۳

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

$-\frac{b}{2a}=\frac{-1}{-1}=1$

$f(1)=-\frac{1}{2}+4=3\frac{1}{2}=\frac{7}{2}$



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

$\frac{x^2}{2}-x-\frac{3}{2}=0$

$x^2-2x-3=0$

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

$x=3 \rightarrow 3=$ بیشترین مقدار b

$x=-1 \rightarrow -1=$ کمترین مقدار a

چون از بازه ۱- تا ۳ برد تابع بیشتر ۳/۲ است

بیشترین مقدار $\sqrt{b-a}:\sqrt{3+1}=2$

۴

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

(۱) (۳) (۲)

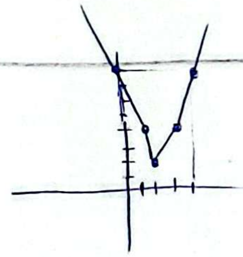
$f(1)=2+2=4$

$f(3)=2+2=4$

$f(2)=1+1=2$

$f(4)=3+1+4=8$

$f(0)=1+3+4=8$



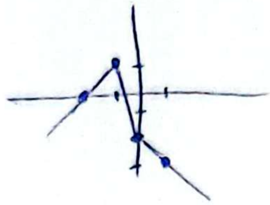
$\rightarrow$ کمترین مقدار: 2

$y = |x| - 2|x+1|$ — 5

$(0) \quad (-1)$

$f(0) = -2 \qquad f(1) = 1-4 = -3$

$f(-1) = 1 \qquad f(-2) = 2-2 = 0$



$\boxed{R_f : (-\infty, 1]}$

$y = \dfrac{x^2+5x+m}{x+1} \rightsquigarrow x^2+5x+m = yx+y$ — 6

$x^2 + (5-y)x + m - y = 0$

$R_f \in \mathbb{R} \Rightarrow x = \dfrac{-b \pm \sqrt{\Delta}}{2a} , \quad \Delta \to (5-y)^2 - 4(m-y) =$

$25 + y^2 - 10y - 4m + 4y$

$= y^2 - 6y + 25 - 4m$

برای این عبارت باید همیشه مثبت باشد

$\Delta < 0 \Rightarrow 36 - 4(25-4m) < 0$

$36 - 100 + 16m < 0$

$16m - 64 < 0 \to 16m < 64 \to m < 4$

$m = 1, 2, 3$

$\boxed{\text{۳ مقدار}}$

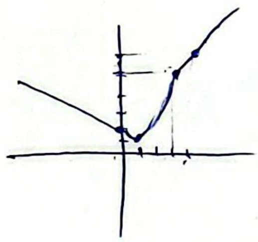
$f(x) \begin{cases} x+2 & x \geq 3 \\ x^2 - 2x + 2 & 0 \leq x < 3 \\ |x| + 2 & x < 0 \end{cases}$ — 7

$\to f(3) = 5 \,/\, f(4) = 6$

$\to f(0) = 2$

$f(3) = 9 - 6 + 2 = 5$

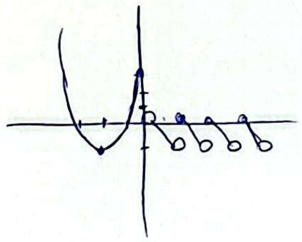
$f(1) = 1$



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

$f(x) = \begin{cases} \overbrace{x^2 + 4x + 3}^{(x+1)(x+3)} & x \leq 0 \\ [2x] - 2x & x > 0 \end{cases}$ — 8

$\to f(0) = 3 \to x = \dfrac{-b}{2a} = \dfrac{-4}{2} = -2 \quad f(-2) = 4 - 8 + 3 = -1$



$\to \boxed{R_f : [-1, +\infty)}$

$y = a + 1 - \sqrt{2x+3}$ — 9

$D_f : [b, +\infty) \longrightarrow D_f : 2x+3 \geq 0 \to 2x \geq -3 \qquad b = -\frac{3}{2}$

$x \geq -\frac{3}{2} \to [-\frac{3}{2}, +\infty)$

$R_f : (-\infty, 5]$

$R_f : \sqrt{2x+3} = -y + a + 1 \xrightarrow{\sqrt{2x+3} \geq 0} -y + a + 1 \geq 0 \to y \leq a + 1$

$R_f : y \leq 5$

$\to a + 1 = 5 \to \underline{a = 4}$

$ab = 4 \times \dfrac{-3}{2} = \boxed{-6}$

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

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

$$D_f = D_g$$

مرحله ۱

$$\Longrightarrow y = \frac{f(x)}{6} - \frac{g(x)}{3} \rightsquigarrow \frac{f(x)}{6} - \frac{\left(3\sqrt{2+2\sqrt{1-x^2}} - f(x)\right)\times 2}{3\times 2} = \frac{f(x) - 6\sqrt{2+2\sqrt{1-x^2}} + 2f(x)}{6}$$

$$= \frac{3f(x) - 6\sqrt{2+2\sqrt{1-x^2}}}{6} = \frac{\overset{\cancel{2}\left(\sqrt{x+1}+2\sqrt{1-x}\right)}{f(x)}}{\cancel{2}} - \sqrt{2+2\sqrt{1-x^2}} = \underbrace{\sqrt{x+1} + 2\sqrt{1-x} - \sqrt{2+2\sqrt{1-x^2}} = y}$$

مرحله ۲

$$\Longrightarrow D_f : \cap\begin{cases} x+1 \geq 0 \rightarrow x \geq -1 \\ 1-x \geq 0 \rightarrow x \leq 1 \end{cases} \Rightarrow D_f = D_g = [-1, 1]$$

$$\begin{cases} \xrightarrow{x=-1 \ (\min)} : 2\sqrt{2} - \sqrt{2} = \sqrt{2} \\ \xrightarrow{x=0} : 1 + 2 - 2 = 1 \\ \xrightarrow{x=1 \ (\max)} : \sqrt{2} - \sqrt{2} = 0 \end{cases}$$

$$\boxed{R_f : [0, \sqrt{2}]}$$