ستوده مدارک — شماره کلاس ۱۰۷ — یازدهم ریاضی B

$f(x)=\sqrt{1-x^2}$ $\quad g=\{(-1,1),(0,4),(2,0),(1,2)\}$ $\quad 2g-3f$ مجموع اعضای برد تابع

$D_f=\sqrt{(1-x)(1+x)}$ $\quad$ (جدول تعیین علامت: -1، 1: $- \; 0 \; + \; 0 \; -$) $\quad D_f=[-1,1]$

در تابع g نقاطی که x آن در دامنه f باشد را انتخاب می‌کنیم

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

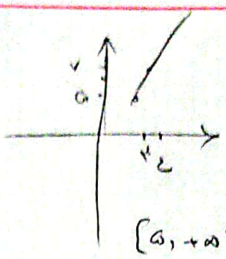
$2g-3f=\{(-1,2),(0,5),(1,4)\} \Rightarrow 2+5+4=11$ 1

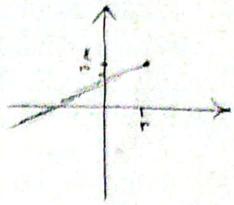
$f(x)=2x-1$ $\quad D_f=[3,+\infty)$

$g(x)=\frac{1}{2}x+2$ $\quad D_g=(-\infty,4]$

$R_f+R_g=?$

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


$[5,+\infty)$


$(-\infty,4]$ 2

$y=\frac{-x^2}{2}+x+2$ $\quad R_y \xrightarrow{\text{میدانیم}} (a,b) \to (\frac{3}{2},+\infty)$ $\quad -\frac{x^2}{2}+x+2>\frac{3}{2} \to -x^2+2x+4>3$

$\max\sqrt{b-a}$ $\quad \sqrt{3-(-1)}=2$

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

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

(جدول تعیین علامت: -1، 3: $- \; 0 \; + \; 0 \; -$)

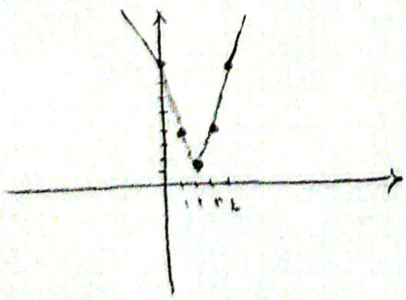
$(-1,3) \to$ نقطه $\frac{3}{2}$

$a=-1 \quad b=3$ 3

$\min y=?$ $\quad y=|x-1|+|x-3|+|2x-4|$

(جدول: نقاط 1، 2، 3)

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



$\min y \to 2$

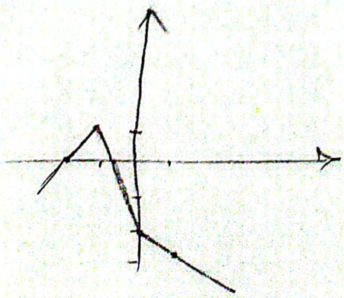
x	0	1	2	3	4
y	8	4	2	4	8

4

$R_y=$ با رسم شکل $\quad y=|x|-2|x+1|$

(جدول: نقاط -1، 0)

$-x+2x+2 = x+2$ | $-x-2x-2 = -3x-2$ | $x-2x-2 = -x-2$



$R_y=(-\infty,1]$

x	-2	-1	0	1
y	0	1	-2	-3

5

m چه مقادیری $\to R_y \neq \mathbb{R}$ $\qquad y = \dfrac{x^2+5x+m}{x+1}$

$x^2+(5-y)x+m-y=0 \qquad x = \dfrac{y-5 \pm \sqrt{(5-y)^2-4m+4y}}{2} \Rightarrow y^2-10y+25-4m+4y \geq 0$

$y^2-6y+25-4m \geq 0$

$y^2-6y+25-4m \xrightarrow{\Delta \leq 0} 36-4(25-4m) \leq 0 \to 36-100+16m \leq 0 \to 16m \leq 64$

$m \leq 4$

$m<4 \Rightarrow \{1,2,3\}$ اگر به جای m عدد ۴ بگذاریم $\dfrac{x^2+5x+4}{x+1} = \dfrac{(x+1)(x+4)}{x+1}$ در این صورت دامنه $\mathbb{R}-\{-1\}$ که ... به ازای ۳ عدد طبیعی — 6

$R_f = ?$

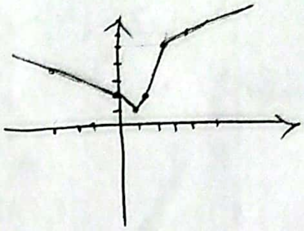
$f(x) = \begin{cases} x+2 & , x \geq 3 \\ x^2-2x+2 & , 0 \leq x < 3 \\ |x|+2 & , x<0 \end{cases}$

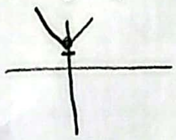
$R_1 = [5,+\infty) \qquad \begin{array}{c|cc} x & 3 & 4 \\ y & 5 & 6 \end{array}$

$y=(x-1)^2+1 \Rightarrow S\left|\begin{smallmatrix}1\\1\end{smallmatrix}\right.$

$R_{y_2} = [2,+\infty)$

$\begin{array}{c|cc} x & 3 & 0 \\ y & 5 & 2 \end{array} \qquad \begin{array}{c|cc} x & 0 & -1 \\ y & 2 & 3 \end{array}$



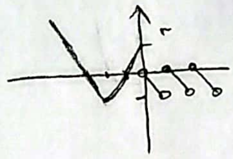


$R_f = [1,+\infty)$ — 7

$R_f = ?$

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

$\to S\left|\begin{smallmatrix}-2\\-1\end{smallmatrix}\right.$



$R_1 = [-1,+\infty)$

$\Rightarrow R_2 = (-1,0]$

$R_1 \cup R_2 = [-1,+\infty)$ — 8

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

$D_y = [b,+\infty)$

$R_y = (-\infty,5]$

$ab = ?$

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

$R_f \to y_{max} \xrightarrow{\text{وقتی}} \sqrt{2x+3} \Rightarrow \min \Rightarrow \sqrt{2x+3} \to 0 \qquad y=5$

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

$y = a+1 \to 5$

$a = 4$

$\left(-\frac{3}{2}\right) \times 4 = -6$ — 9

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

$x+1 \geq 0 \to x \geq -1$

$1-x \geq 0 \to x \leq 1$

$x \in [-1,1]$

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

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

$f(1) = 2\sqrt{2}, \; f(-1) = 4\sqrt{2} \qquad f(0) = 6$

$D_f = D_g$

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

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

$R_y = ? \qquad y = \dfrac{f(x)}{6} - \dfrac{g(x)}{2} \qquad y(1) = \dfrac{2\sqrt{2}}{6} - \dfrac{\sqrt{2}}{2} = 0 \qquad y(-1) = \dfrac{4\sqrt{2}}{6} - \dfrac{-\sqrt{2}}{2} = \dfrac{9\sqrt{2}}{6} = \sqrt{2}$ — 10