آنیز زنگنه ابری

(1

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

$3f = \{(-1,0),(1,0),(0,3)\}$

$(1-x^2)$ $\quad -1 \quad 1$ $\quad - \; + \; -$

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

$2+5+4 = 11$

(2

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

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

$\mathrm{I} \cup \mathrm{II} \longrightarrow (-\infty,4] \cup [5,+\infty)$

(3

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

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

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

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

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

$-1 \quad 3$ $\quad - \; + \; -$ $\quad D_f \rightarrow (-1,3)$ $\quad \sqrt{b-a} = \sqrt{4} = 2$

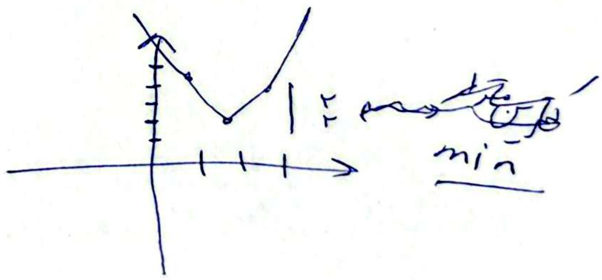
(4

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

$1 \quad 2 \quad 3$

$-4x+8 \;|\; -2x+6 \;|\; 2x-2 \;|\; 4x-8$

$4 \quad 2 \quad 4$



$2 =$ min

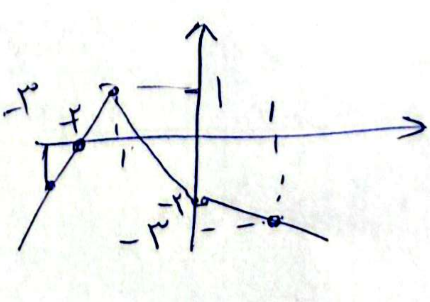
(5

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

$-1 \quad 0$

$x+2 \;|\; -3x-2 \;|\; -x-2$

$1 \quad -2$



(۶

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

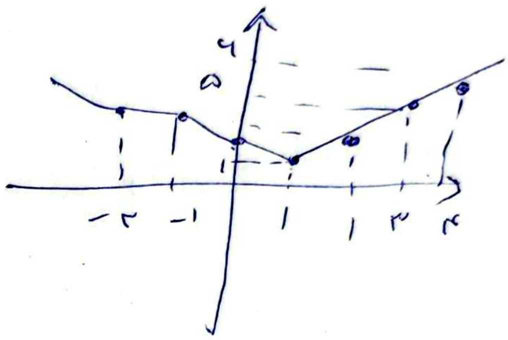
$\Delta\geq 0 \to (5-y)^2-4(m-y)\geq 0 \to 25+y^2-10y-4m+4y\geq 0$

$\to y^2-6y+25-4m\geq 0 \to \Delta=36-100+16m\leq 0 \to 4\geq m$

$m=4 \to \frac{x^2+5x+4}{x+1}=x+4 \to \frac{x+(-1)}{0}$ تعریف نشده $\to x=\{1,3,4\}$

(۷

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

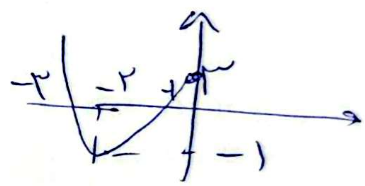


$R_f=[1,+\infty)$

(۸

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

$\hookrightarrow -1\leq [2x]-2x<0 \to (-1,0]$



$R_f=[-1,\infty)$

(۹

$y=a+1-\sqrt{2x+3}$ $\quad D=[b,+\infty)$ $\quad R=(-\infty,5]$

$2x+3\geq 0 \to 2x\geq -3 \to x\geq -1.5$

$ab=-6$

if $b=-1.5 \to \sqrt{0}=0$

Subject : (   )   Date : ....

$f(x) = 2\sqrt{x+1} + 4\sqrt{1-x} - \sqrt{4x+4}$ (10

$+ \sqrt{16+16x}$

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

$y = \dfrac{f(x) - 2g(x)}{6} \Rightarrow 6\sqrt{x+1} + 12\sqrt{1-x}$

$-6\sqrt{2+2\sqrt{1-x^2}}$ $\qquad y = \sqrt{x+1} + 2\sqrt{1-x}$

$- \sqrt{2+2\sqrt{1-x^2}} \Rightarrow -1 \leq x \leq 1$

$x = -1 \quad y = \sqrt{2}$

$x = 1 \quad y = 0$

$x = 0 \quad y = 1$ $\qquad R_f = [0, \sqrt{2}]$

— Arman —