اسم: ... پایه دهم A

۱)

$f(x)=\sqrt{1-x^2} \Rightarrow x^2\le 1 \Rightarrow -1\le x\le 1 \Rightarrow D_f=[-1,1]$

$D_g=\{-1,0,3,1\}$ $\qquad D_g\cap D_f \Rightarrow \{-1,0,1\}$

$f(1)=0 \;,\; g(1)=2 \Rightarrow (2g-3f)(1)=4$

$f(0)=1 \;,\; g(0)=4 \Rightarrow (2g-3f)(0)=5$

$f(-1)=0 \;,\; g(-1)=1 \Rightarrow (2g-3f)(-1)=2$

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

$\Rightarrow$ ۲ و ۵ و ۴

۲)

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

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

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

۳)

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

-1		3
-	+	-

$(-1,3)$

$a=-1 \quad b=3$

$\sqrt{3-(-1)}=\sqrt{4}=2$

۴)

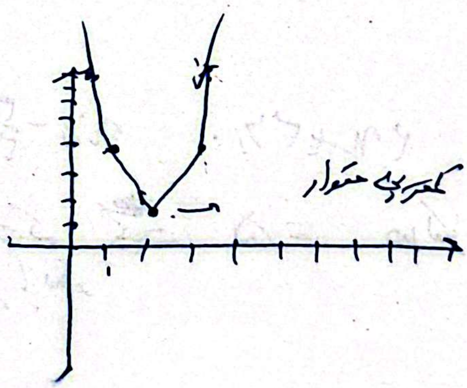
$4\to 8$

$3\to 4$ — حرز

$2\to 3$ — حرز

$1\to 4$ — حرز

$0\to 8$

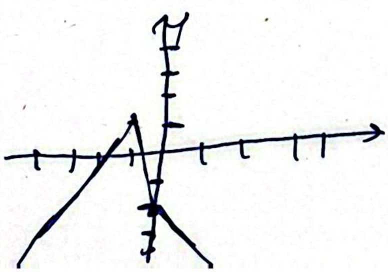


۲) تابع غیر ممتد ... (تابع ... متوالی)

۵)

-1		0	
$x+2$	$-\frac{3}{2}x-2$		$-x-2$

(1) (-1)



$R_y=(-\infty,1]$

۶

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

$$\Rightarrow \Delta \leq 0 \quad \sqrt{y^2 - 10y + 25 + 4y - 4m} \Rightarrow \Delta' \leq 0$$

$$y^2 - 6y + 25 - 4m \leq 0 \quad 36 - 100 + 16m \leq 0 \Rightarrow 16m - 64 \leq 0$$

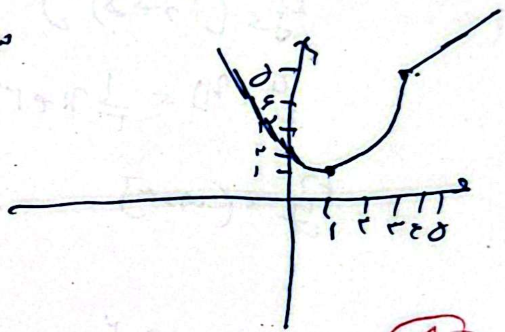
$$m \leq 4$$

۴ تعداد $\quad m = \{1, 2, 3, 4\} \Leftarrow$

۷

$$f(x) = \begin{cases} x+2 \;;\; x \geq 3 \Rightarrow x=3 \; y=5 \\ x^2 - 2x + 2 \;\; 0 \leq x < 3 \longrightarrow x_s = \frac{-b}{2a} = 1 \quad y_s = 1 \\ |x| + 2 \;;\; x < 0 \Rightarrow x=0 \; y=2 \\ \quad x=-1 \; y=3 \end{cases}$$

$$R_f = [1, +\infty) \Leftarrow$$



۸

$$[2x) - (2x]\;;\; x \geq 0 \xRightarrow{2x=M} [M] - M \Rightarrow R_{y_2} = (-1, 0]$$

$$y_1 = x^2 + 4x + 3 \begin{cases} x_s = -\frac{4}{2} = -2 \\ y_s = -1 \end{cases} \Rightarrow R_{y_1} = [-1, +\infty) \xRightarrow{R_{y_1} \cup R_{y_2}} [-1, +\infty)$$

۹

$$2x + 3 \geq 0 \quad x \geq -\frac{3}{2} \Rightarrow b = -\frac{3}{2}$$

حداکثر برد $= 5 \Rightarrow$ زمانی حداکثر است که رادیکال صفر باشد $\Rightarrow a + 1 = 5 \quad a = 4$

$$4 \times -\frac{3}{2} = -6$$

$x \geq -1$ $\qquad$ $x \leq 1$

$$f(x) = 2\sqrt{x+1} + 4\sqrt{1-x} \Rightarrow D_f = [-1,1]$$

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

$$y = \frac{f(x)}{6} - \frac{g(x)}{3} = \frac{2\sqrt{x+1} + 4\sqrt{1-x}}{6} - \frac{3\sqrt{2+2\sqrt{1-x^2}} - 2\sqrt{x+1} - 4\sqrt{1-x}}{3}$$

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

$$- \sqrt{1-x} - \cancel{\sqrt{1+x}}$$

$$\Rightarrow \sqrt{1-x} = y = \frac{f(x)}{6} - \frac{g(x)}{3} \Rightarrow D_y = [-1,1] \Rightarrow R_y = [0, \sqrt{2}]$$