نام و نام خانوادگی: آیلا وارسی — تکلیف شماره ۸ — کلاس یازدهم تجربی ۲ — ۱۹٫۵

۱ — ۱٫۷۵

$D_f = [-1, 1]$

g دامنه مشترک با $\rightarrow -1 , 1 , 0$

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

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

$2g-3f : \{(-1, \cancel{2-0}) \to 2, (0, \cancel{8-3}) \to 5, (1, \cancel{4-0}) \to 4\} \Rightarrow R_{2g-3f(x)} = \{2, 5, 4\}$

۲ — ۲

$f(3) = 9-1 = 5 \Rightarrow R_f = [5, +\infty)$

$g(3) = 1+3 = 4 \Rightarrow R_g = (-\infty, 4]$

$R_f \cup R_g = \mathbb{R} - (4, 5)$

۳ — ۲

$\frac{-x^2}{2} + x + 3 > \frac{3}{2} \xrightarrow{\times 2} -x^2 + 2x + 6 > 3 \Rightarrow x^2 - 2x - 3 < 0 \Rightarrow \underbrace{-3}_{a} < x < \underbrace{1}_{b}$

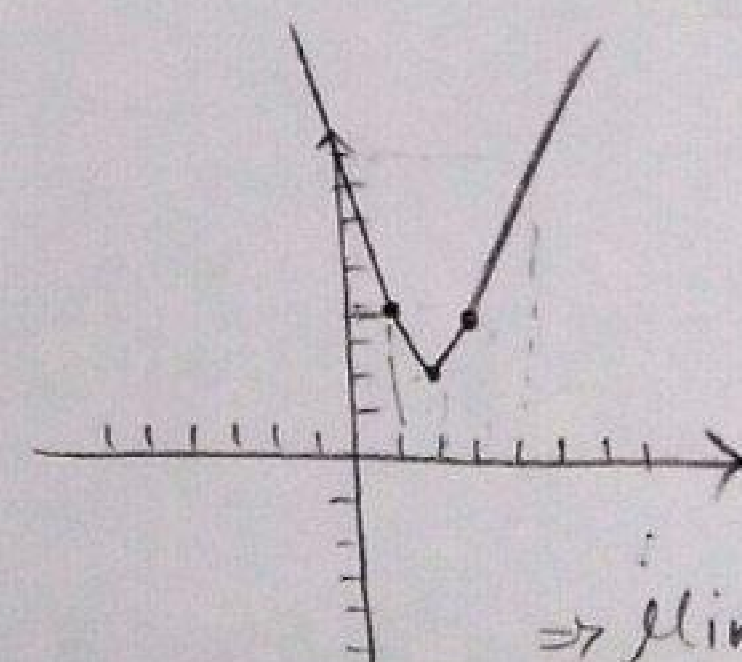
$-3 \quad 1$

$+ \mid - \mid +$

$\sqrt{\underset{1+3}{b-a}} = \sqrt{4} = 2$

۴ — ۲

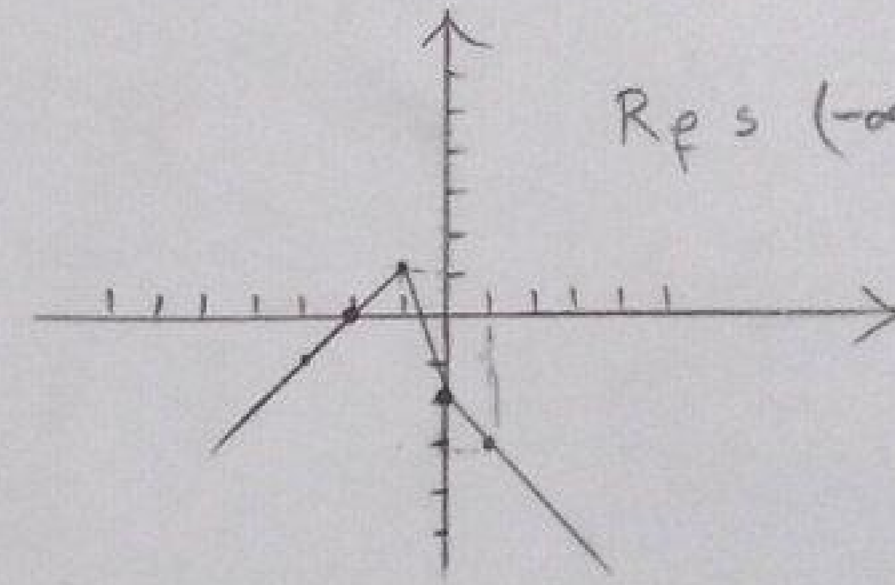
$$\begin{cases} x-1+x-3+2x-4 & x>3 \\ x-1-x+3+2x-4 & 2\le x\le 3 \\ x-1-x+3-2x+4 & 1\le x\le 2 \\ 1-x-x+3-2x+4 & x<1 \end{cases} \rightarrow \begin{cases} 4x-8 & x>3 \\ 2x-2 & 2\le x\le 3 \\ -2x+6 & 1\le x\le 2 \\ -4x+8 & x<1 \end{cases}$$



$\Rightarrow \min = 2$

۵

$$\begin{cases} x-2x-2 & x>0 \\ -x-2x-2 & -1\le x\le 0 \\ -x+2x+2 & x<-1 \end{cases} \rightarrow \begin{cases} -x-2 & x>0 \\ -3x-2 & -1\le x\le 0 \\ x+2 & x<-1 \end{cases}$$



$R_f = (-\infty, +1]$

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۶

$yx+y = x^2+5x+m$

۱/۷۵

$x^2+(5-y)x+m-y=0 \rightarrow b^2 \geq 4ac \rightarrow (5-y)^2 \geq 4(m-y)$

$m=4 \rightarrow \dfrac{x^2+5x+4}{x+1} = x+4 , \ \underline{x \neq -1}$

برد تابع $\mathbb{R}$ نمی‌شود

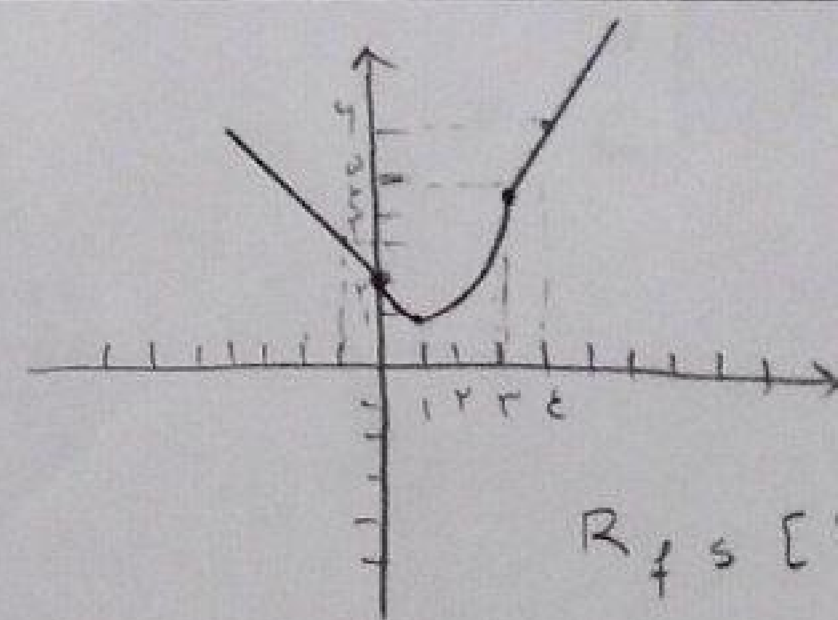
$\rightarrow y^2-6y+25-4m \geq 0 \quad \begin{cases} a>0 \ \boxed{\checkmark} \\ \Delta \leq 0 \rightarrow b^2 < 4ac \rightarrow 36 < 4(25-4m) \rightarrow m \leq 4 \rightarrow m = \{1,2,3,4\} \end{cases}$

✓

$x \geq 3 : \ \begin{vmatrix} 3 \\ 5 \end{vmatrix} \quad \begin{vmatrix} 4 \\ 6 \end{vmatrix}$

$|x|+2 \begin{cases} \xrightarrow{x>0} = x+2 \\ \xrightarrow{x<0} = 2-x \end{cases} \xrightarrow{x<0} 2-x$

$0 \leq x < 3 : \ \begin{vmatrix} -b/2a = 1 \\ 1-2+2=1 \end{vmatrix}$



$R_f = [1, +\infty)$

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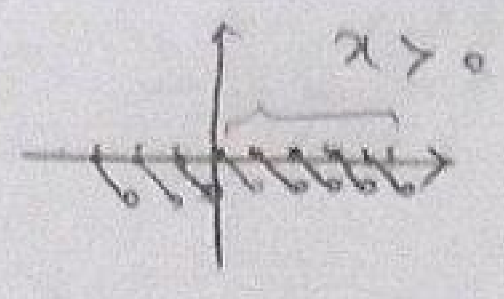
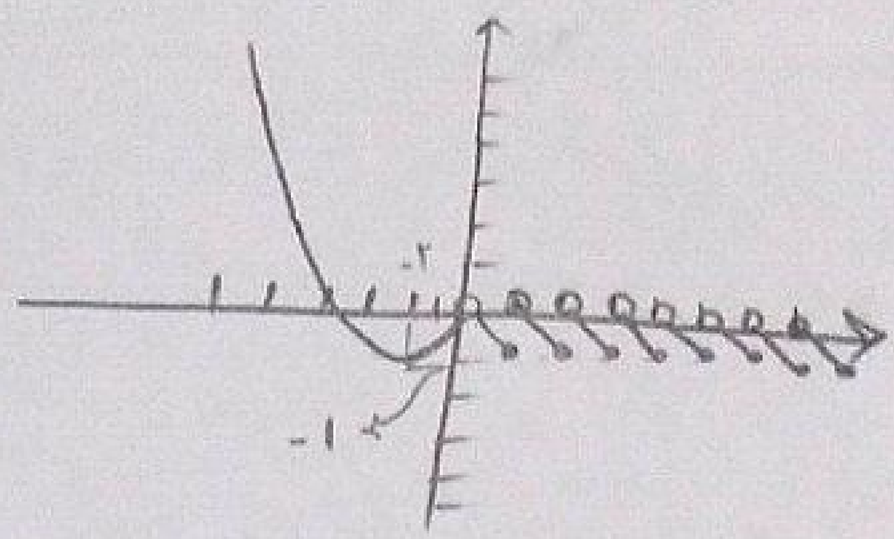
8

$[2x] - 2x$:





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

$-\frac{b}{2a} = \frac{-4}{2} = -2$

$4 - 8 + 3 = -1$

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9

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

برد : $x = -\frac{3}{2} \Rightarrow y = a + 1 = 5 \Rightarrow a = 4$

$\Rightarrow a \times b = -\frac{3}{\cancel{2}} \times \cancel{4}^{2} = -6$

۲

10

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

$\Rightarrow -\frac{g(x)}{3} + \frac{f(x)}{6} = \frac{\cancel{-2\sqrt{x+1}} + 2\sqrt{1-x} + \cancel{2\sqrt{x+1}} + 4\sqrt{1-x}}{6} = \sqrt{1-x} = h(x)$

$R_h = [0, \sqrt{2}]$

برای $x = 1 \to 0$

$x = -1 \to \sqrt{2}$

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