رها آرمی — سوم حسوا — گروه تیز دهم ریاضی

۱)
$g = \{(-1,1),(0,4)(2,0)(1,2)\}$ $f(x) = \sqrt{1-x^2}$

$2g - 3f = ?$

$2g \to \{(-1,2)(0,8)(2,0)(1,4)\}$ $D(f) = [-1,1]$

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

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

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

$2 + 4 + 5 = 11$

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۲)
$f(x) = 2x-1 \quad D(f) = [3,+\infty) \to R_f = [5,+\infty)$

$g(x) = \frac{1}{2}x + 3 \quad D(g) = (-\infty,2] \to R_g = (-\infty,4]$

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

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۳)
$g = -\frac{x^2}{2} + x + 3$

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

$-x^2 + 2x + 3 \geq 0 \to -(x+1)(x-3) \geq 0$

$D(f) = [-1,3] \to \sqrt{b-a} = \sqrt{4} = 2$

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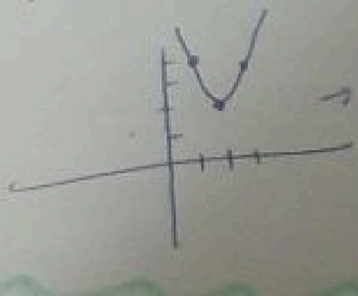
۴)
$g = |x-1| + |x-3| + |4-2x|$

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



$\to 2$ کمترین مقدار

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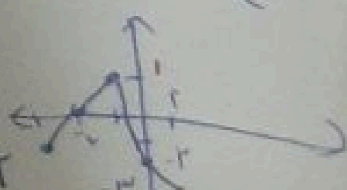
۵)
$x \to 0$, $\to -1$

$\begin{cases} x > 0 & x - 2x - 2 \to -x - 2 \\ -1 \leq x < 0 & -x - 2x - 2 = -3x - 2 \\ x < -1 & -x + 2x + 2 = x + 2 \end{cases}$



$R_f = (-\infty, 1]$

۶)

$xy + y = x^2 + 5x + m \rightarrow x^2 + (5-y)x + (m-y) = 0 \rightarrow \Delta \geq 0$

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

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

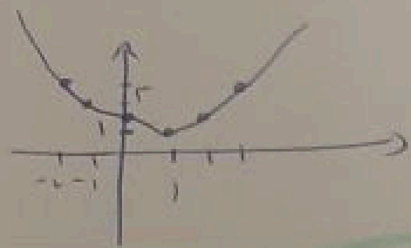
$\Delta \rightarrow \frac{36 - 100 + 16m}{-64} \leq 0 \rightarrow 4 \geq m$

$m = 4 \rightarrow \frac{x^2 + 5x + 4}{x+1} \Rightarrow x + 4 = \frac{x-1}{(x)} \rightarrow x \neq 4 \rightarrow m = \{1, 2, 3\}$

→ عدد ۰

۷)

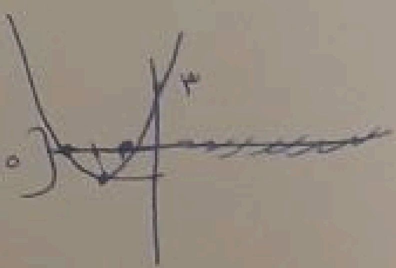
$f(x) = \begin{cases} x+2 & x \geq 2 \\ x^2 - 2x + 2 & 0 \leq x < 2 \\ |x| + 2 & x < 0 \end{cases}$ $\quad R_{(f)} = [1, +\infty)$



۸)

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

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



$R(f) = [-1, +\infty)$

۹)

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

$2x + 3 \geq 0 \rightarrow 2x \geq -3 \rightarrow x \geq -1/5 \rightarrow b = -1/5$

$ab = -6 \quad$ if $b = -1/5 \Rightarrow \sqrt{0} = 0$

۱۰)

$f(x) = 2\sqrt{x+1} + 4\sqrt{1-x} - \sqrt{4x+4} + \sqrt{16 - 16x}$

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

$R(f) = [\sqrt{2}, ...)$

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

$y = \sqrt{x+1} + 2\sqrt{1-x} - \sqrt{2 + 2\sqrt{1-x^2}} \rightarrow -1 \leq x \leq 1$

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

$x = 0 \rightarrow 1$