

$$f(x) = \sqrt{1-x^2}, g = \{(x, y) \in \mathbb{R}^2 \mid (x, y) \in \text{graph of } f\}$$

$$f(x) = \sqrt{1-x^2}, 1-x^2 \geq 0 \Rightarrow -1 \leq x \leq 1$$

سوال 11 =>

$$2g = \{(x, y), (x, y) \in \text{graph of } f\} \quad 3f = \{(x, y) \in \text{graph of } f\}$$

$$Dg \cap f = \{(x, y) \in \text{graph of } f\}$$

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$$2g - 3f = \{(x, y) \in \text{graph of } f\}$$

$$x + y + z = 11$$

$$f(x) = x^{n-1} \rightarrow Df = [x, +\infty) \rightarrow Rf = [x, +\infty)$$

$$Rf \cup Rg = (-\infty, x] \cup [x, +\infty)$$

سوال 12 =>

$$g(x) = \frac{1}{x} \quad x > 0 \rightarrow Dg = (-\infty, x] \rightarrow Rg = (-\infty, x]$$

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$$y = \frac{-x^2 + x + 4}{x} > \frac{1}{x} \quad (a, b) \quad ; \sqrt{b-a}$$

سوال 13 =>

$$-x^2 + x + 4 > \frac{1}{x} \Rightarrow -x^2 + x + 4 > 0 \quad \frac{-1 \pm \sqrt{1+16}}{-2} \Rightarrow (-1, 4) \Rightarrow \begin{cases} a = -1 \\ b = 4 \end{cases}$$

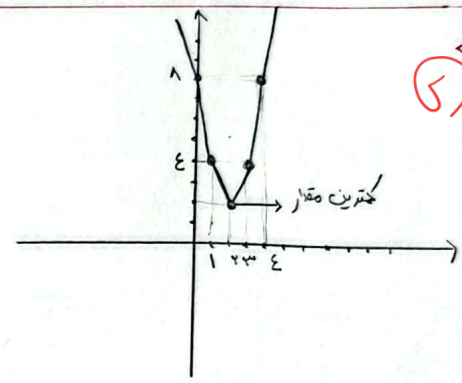
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$$\sqrt{b-a} = \sqrt{4-(-1)} = \sqrt{5} = 2$$

$$y = |x-1| + |x-2| + |x-3|$$

	1	2	3
$-x+1-x+2-x+3$	$x-1-x+2+x+3$	$x-1-x+2+x-3$	$x-1-x+2+x-3$
$-3x+6$	$-x+4$	$x-2$	$x-1$
$x \mid 0 \quad 1 \quad 2 \quad 3 \quad 4$	$y \mid 6 \quad 4 \quad 2 \quad 1$		

$$\text{حداقل مقدار} = 2$$

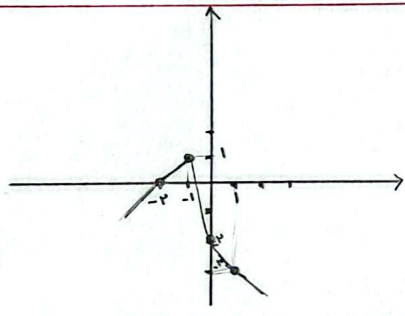


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سوال 14 =>

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

	-1	0
$-x+1-x-1$	$-x-1-x-1$	$x-1-x-1$
$-2x$	$-2x-2$	$-x-2$
$x \mid -2 \quad -1 \quad 0 \quad 1$	$y \mid 0 \quad 1 \quad 2 \quad 3$	



$$Rf = (-\infty, 0]$$

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سوال 15 =>

$$y = \frac{x^2 + \omega x + m}{x+1} \quad ; Rf = \mathbb{R}$$

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سوال 16 =>

$$y \cdot n + y = x^2 + \omega x + m \Rightarrow x^2 + (\omega - y)x + m - y = 0$$

$$\Delta = (\omega - y)^2 - 4(m - y) = y^2 - 4\omega y + 4\omega^2 - 4m + 4y = y^2 - 4y + 4\omega^2 - 4m \quad x = \frac{y - \omega \pm \sqrt{y^2 - 4y + 4\omega^2 - 4m}}{2}$$

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میت با شماره 18
است

$$y^2 - 4y + 4\omega^2 - 4m \geq 0 \Rightarrow 4y - 4(4\omega^2 - 4m) \leq 0 \Rightarrow 4y - 16\omega^2 + 16m \leq 0 \Rightarrow 14m \leq 4\omega^2 \Rightarrow m \leq \frac{1}{4}\omega^2$$

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میت با شماره 18
است

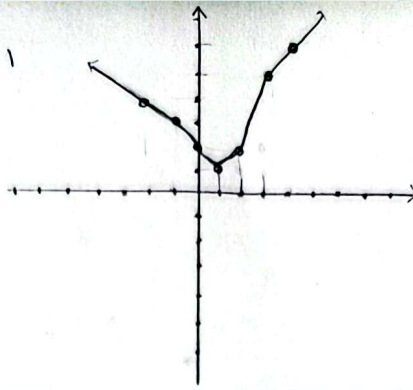
$$m < \frac{1}{4}\omega^2 \rightarrow \{1, 2, 3\}$$

$$f(x) = \begin{cases} x+2 & ; x \geq 3 \\ x^2-2x+2 & ; 0 \leq x < 3 \rightarrow \frac{-b}{2a} = \frac{1}{1} = 1, y = 1 \\ |x|+2 & ; x < 0 \end{cases}$$

$$\frac{x}{y} = \frac{3}{4}$$

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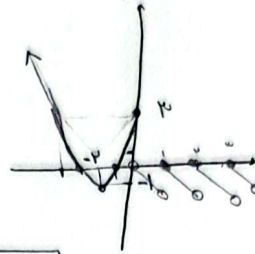
$$R_f = [1, +\infty)$$

سوال ٧ <=

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$$f(x) = \begin{cases} x^2 + 2x + 2 & ; x \leq 0 \\ [x] - 2x & ; x > 0 \rightarrow [x] = x \rightarrow R: (-1, 0) \end{cases}$$

$$x^2 + 2x + 2 \rightarrow \frac{-b}{2a} = \frac{-2}{2} = -1, y = -1 \quad \min | -1$$



$$R_f = (-1, 0) \cup [-1, +\infty) \Rightarrow [-1, +\infty)$$

سوال ٨ <=

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$$y = a + 1 - \sqrt{2x+2} \quad D_f = [b, +\infty) \quad R_f = (-\infty, c] \quad a, b = ?$$

$$\rightarrow x+2 \geq 0 \rightarrow x \geq -2 \Rightarrow b = -2$$

$$\text{بمشتق مقدار } y \text{ نسبت به } x \rightarrow a + 1 - \sqrt{2(-\frac{1}{2})+2} = 0 \Rightarrow a + 1 = 0 \Rightarrow a = -1$$

$$x = -\frac{1}{2}$$

$$a, b = -1, -2$$

سوال ٩ <=

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$$f(x) = \sqrt{x+1} + \sqrt{x-1}, \quad g(x) = \sqrt{x+1} - \sqrt{x-1}, \quad D_f = D_g, \quad y = \frac{f(x)}{g(x)} - \frac{g(x)}{f(x)}$$

سوال ١٠ <=

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$$\begin{cases} x+1 \geq 0 \rightarrow x \geq -1 \\ x-1 \geq 0 \rightarrow x \geq 1 \end{cases} \Rightarrow x \in [1, +\infty)$$

$$f(1) = \sqrt{2}, \quad f(-1) = \sqrt{0} = 0, \quad g(1) = 0$$

$$\rightarrow f(1) + g(1) = \sqrt{2} + 0 = \sqrt{2}, \quad g(1) = 0$$

$$\rightarrow f(-1) + g(-1) = 0 + \sqrt{2} = \sqrt{2}, \quad g(-1) = \sqrt{2}$$

$$y(1) = \frac{\sqrt{2}}{0} = \frac{\sqrt{2}}{0}, \quad y(-1) = \frac{0}{\sqrt{2}} = 0$$

$$\Rightarrow R_f = [0, \sqrt{2}]$$