

۱۹, ۲۵

نام و نام خانوادگی: کلاس: پاسخنامه تشریحی تکلیف شماره: Δ

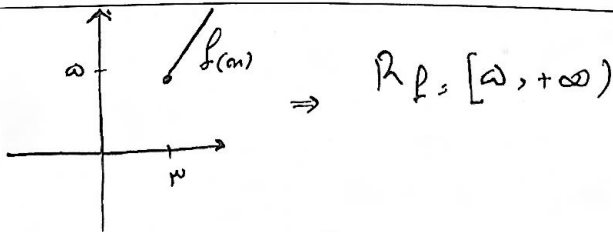
$$|x| \leq 1 \Rightarrow -1 \leq x \leq 1 \Rightarrow D_f = [-1, 1] \quad D_f \cap D_g = \{-1, 0, 1\}$$

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

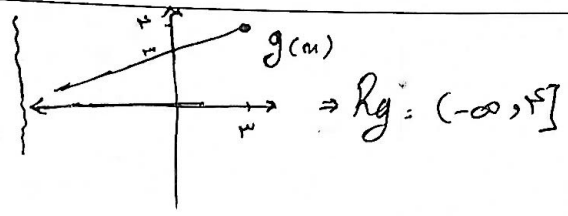
$$\Rightarrow 2 + 5 + 4 = 11 \quad \checkmark$$

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$$\Rightarrow R_f = [0, +\infty)$$



$$\Rightarrow R_g = (-\infty, 0]$$

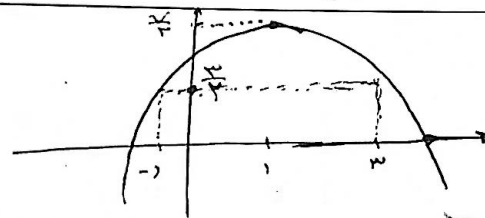
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$$\Rightarrow R_f \cup R_g = (-\infty, 0] \cup [0, +\infty) = \mathbb{R} - (0, 0) \quad \checkmark$$

$$y = -\frac{1}{4}x^2 + x + 3$$

$$\max_{x \in \mathbb{R}} \begin{cases} -\frac{b}{2a} = \frac{-1}{-1/2} = 2 \\ -\frac{1}{4} + 4 + 3 = \frac{25}{4} \end{cases}$$



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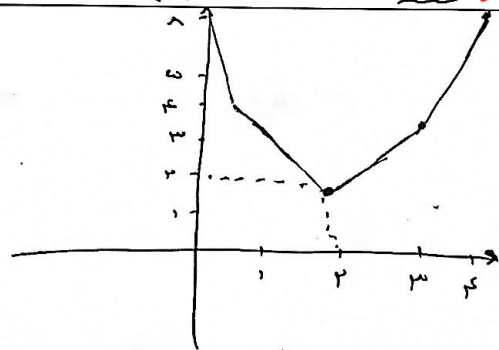
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$$-\frac{1}{4}x^2 + x + 3 = \frac{25}{4} \Rightarrow -\frac{1}{4}x^2 + x - \frac{1}{4} = 0 \Rightarrow x = -1, 3 \Rightarrow (a, b) = (-1, 3)$$

$$\Rightarrow \sqrt{b-a} = \sqrt{3-(-1)} = \sqrt{4} = 2 \quad \checkmark$$

1	2	3
$-f(a) + 1$	$-f(a) + 9$	$f(a) - 2$

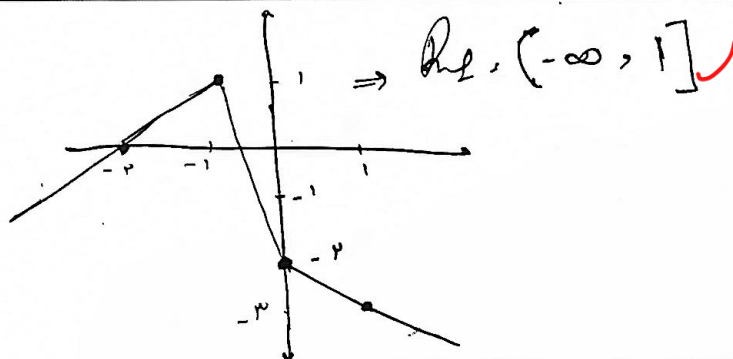
$$\Rightarrow \min = 2 \quad \checkmark$$



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-1	0
$a + 2$	$-3a - 2$



$$\Rightarrow D_f = (-\infty, 1] \quad \checkmark$$

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$$a^2 + 2a + m = y a + y \Rightarrow a^2 + (2-y)a + (m-y) = 0 \Rightarrow \Delta \geq 0$$

$$\Rightarrow (2-y)^2 - 4(m-y) \geq 0 \Rightarrow 4 + y^2 - 4y - 4m + 4y \geq 0 \Rightarrow y^2 - 4y + (4 - 4m) \geq 0$$

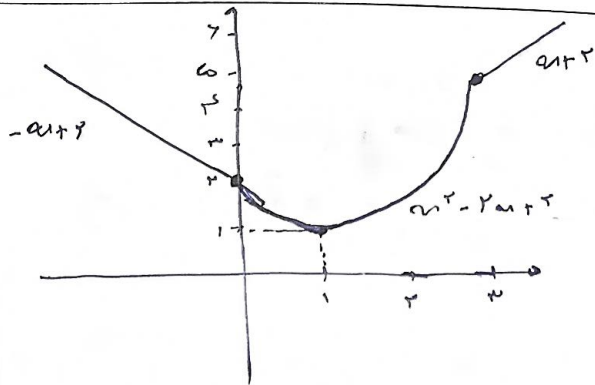
چون عبارت درجه دوم بزرگتر مساوی صفر است پس دلتای آن که چک می‌کنیم باید باشد.

$$\Rightarrow \Delta \leq 0 \Rightarrow (-4)^2 - 4(4 - 4m) \leq 0 \Rightarrow 16 - 16 + 16m \leq 0 \Rightarrow 16m \leq 0 \Rightarrow m \leq 0$$

$$\Rightarrow m = \{1, 2, 3, 4\} \Rightarrow$$

نه $m = 4$ باشد از بدخف می‌شود
دیده R نیست پس $m = 1, 2, 3$

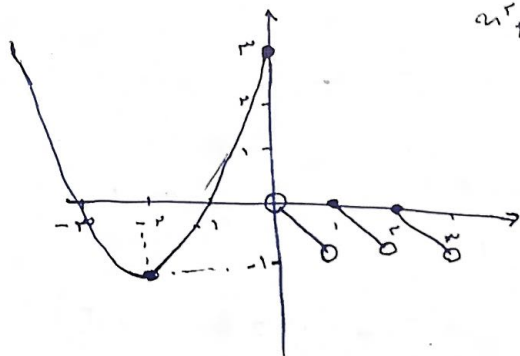
به ازای Δ مقدار طبیعی



$$\min \left| \frac{-b}{2a} = \frac{y}{x} = 1 \right.$$

$$\left. 1 - 2 + 2 = 1 \right.$$

$$\Rightarrow R_f: [1, +\infty)$$



$$a^2 + 4a + 3 = (a+1)(a+3)$$

$$\min \left| \frac{-b}{2a} = \frac{-4}{2} = -2 \right.$$

$$\left. (-2)^2 + 4(-2) + 3 = -1 \right.$$

$$\Rightarrow R_f: [-1, +\infty)$$

$$2a \geq 3 \Rightarrow a \geq \frac{3}{2} \Rightarrow R_f = \left[\frac{3}{2}, +\infty \right) = [b, +\infty) \Rightarrow b = \frac{3}{2}$$

دقت!

$$\min m = a + 1 - \sqrt{2\left(\frac{3}{2}\right) + 3} = a + 1 = 4 \Rightarrow a = 3$$

$$\Rightarrow ab = 3 \times \frac{3}{2} = \frac{9}{2}$$

$$2x \geq -1, 1 \geq ax \Rightarrow R_f, R_g: [-1, 1]$$

$$2 + 2\sqrt{1-a^2}, (\sqrt{1-a} + \sqrt{1+a})^2$$

$$\Rightarrow 2\sqrt{2+2\sqrt{1-a^2}}, 2(\sqrt{1-a} + \sqrt{1+a}) = f(m) + g(m) \Rightarrow g(m), 2\sqrt{1-a} + 2\sqrt{1+a} - 2\sqrt{1+a} - 2\sqrt{1-a}$$

$$\Rightarrow f(m), \sqrt{1+a} - \sqrt{1-a} \Rightarrow g: \frac{f(m) - 2g(m)}{4} \Rightarrow g: \frac{9\sqrt{1-a}}{4} = \sqrt{1-a}$$

$$D: [-1, 1] \rightarrow R: [0, \sqrt{2}]$$