

نام و نام خانوادگی پسر/دختر پاسخنامه تشریحی تکلیف شماره کلاس تاریخ ۱۳۹۰

الف) $4w^2 - 5w - 4 = 0$ $w^2 - 5w - 34 = 0$ $(w-9)(w+2) = 0$ $w < \frac{9}{4}$

ب) $3w^2 - 8w - 3 = 0$ $w^2 - 8w - 9 = 0$ $(w-9)(w+1) = 0$

ج) $2w^2 - 2w - 3 = 0$ $w^2 - 2w - 12 = 0$ $(w-4)(w+2) = 0$

د) $2w^2 - 5w - 12 = 0$ $w^2 - 5w - 24 = 0$ $(w-8)(w+3) = 0$

نتیجه: $w = 2$

الف) $w^2 - 5w - 12 = 0$ $(w-7)(w+2)$ $w = 7$

ب) $2w^2 + 5w + 3 = 0$ $w^2 + 5w + 2 = 0$ $(w+2)(w+3) = 0$ $w = -2$

ج) $w^2 + 2w + 3 = 0$ $\Delta = 2^2 - 12 = -8 < 0$ **ریشه ندارد**

د) $3w^2 + 3w - 2 = 0$ $\Delta = 3^2 + 24 = 33$

نتیجه: $w = \frac{-3 \pm \sqrt{33}}{6}$

$A \times B - B^2 \rightarrow \{(1,2), (1,3)\}$

$B^2 = \{(2,2), (2,3), (3,2), (3,3)\}$

$A \times B = \{(1,2), (1,3), (2,2), (2,3), (3,2), (3,3)\}$

الف) $f(w) = \{(3, m^2), (2, 1), (-2, m), (-2, m), (3, m+2), (m, 2)\}$

$m^2 = m+2 \rightarrow m^2 - m - 2 = 0$ $m \rightarrow \frac{-1 \pm \sqrt{1+8}}{2} = 2$ **$m = -1$**

$\xrightarrow{m=-1} \{(3, 1), (2, 1), (-2, -1), (-2, -1), (3, 1), (-1, 2)\} \checkmark$

ب) $g(w) = \{(3, m^2), (2, 1), (m, 2), (3, m+2), (-2, m), (-1, 3)\}$ $m^2 = m+2$ $m^2 - m - 2 = 0$ $m \rightarrow \frac{-1 \pm \sqrt{1+8}}{2} = 2$

$\xrightarrow{m=-1} \{(3, 1), (2, 1), (-1, 2), (3, 1), (-2, -1), (-1, 3)\} \times$

$\xrightarrow{m=2} \{(3, 4), (2, 1), (2, 2), (3, 4), (-2, 2), (-1, 3)\} \times$

نتیجه: **هیچ مقابلی از m نماند**

$f(a) = \{(1, a^2), (1, 3a-2), (a^2, 3a+2)\}$

$a^2 = 3a-2 \rightarrow a^2 - 3a + 2 = 0$ $a < \frac{1}{a} = 2$

$\xrightarrow{a=1} \{(1, 1), (1, 1), (1, 5)\} \times$

$\xrightarrow{a=2} \{(1, 4), (1, 4), (4, 8)\} \checkmark$

نتیجه: **$a = 2$**

$$f(x) = \begin{cases} x^2 - 1 & x \leq 1 \\ ax + b & 1 \leq x \leq 2 \\ x^2 & x \geq 2 \end{cases}$$

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$$\begin{aligned} x=1 &\rightarrow \begin{cases} 0 = a+b \\ 2a+b=1 \end{cases} \rightarrow \begin{cases} a+b=0 \\ 2a+b=1 \end{cases} \Rightarrow \begin{cases} b=-1 \\ a=1 \end{cases} \end{aligned}$$

$$a \times b = -1$$

$$f(x) = \begin{cases} 2x - 2 & x \geq K \\ \varepsilon - x & x \leq K \end{cases}$$

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$$x=K \rightarrow 2K - 2 = \varepsilon - 3K$$

$$\Delta K = \varepsilon \Rightarrow K = \frac{\varepsilon}{5}$$

$$\text{الف) } y^2 - 4y = x^2 - \varepsilon x + 3 \quad x=1 \rightarrow y \begin{cases} 0 \\ \pm 4 \end{cases} \times \quad \text{تابع نیست}$$

$$(x-1)(x-3) = y(y^2-4)$$

$$\text{ب) } |x| + |y| = 2 \rightarrow |x| - 2 = -|y| \quad x=-1 \quad y = \pm 1 \times \quad \text{تابع نیست}$$

$$\text{ج) } |y| = \sqrt{1 - \cos x} \quad x=0 \quad y = \pm \sqrt{\frac{1}{2}} \times \quad \text{تابع نیست}$$

$$\text{د) } y^2 + x^2 + 2x + 1 = 0$$

$$x^2 + 2x = -y^2 - 1 \rightarrow x(x+2) = -(y^2+1)$$

$$x = -1 \Rightarrow y = 0$$

$$\text{تابع نیست}$$

$$\text{الف) } \sqrt[3]{y} + x^2 = 2x - 2$$

$$\begin{cases} x_1^2 - 2x_1 + \sqrt[3]{y_1} + 2 = 0 \\ x_2^2 - 2x_2 + \sqrt[3]{y_2} + 2 = 0 \end{cases} \xrightarrow{x_1=x_2} \sqrt[3]{y_1} = \sqrt[3]{y_2} \Rightarrow y_1 = y_2 \quad \text{تابع هست}$$

$$\text{ب) } y^2 + 2y = \varepsilon x \quad \begin{cases} y_1^2 + 2y_1 = \varepsilon x_1 \\ y_2^2 + 2y_2 = \varepsilon x_2 \end{cases} \xrightarrow{x_1=x_2} y_1^2 + 2y_1 = y_2^2 + 2y_2 \Rightarrow y_1^2 - y_2^2 + 2y_1 - 2y_2 = 0$$

$$(y_1 - y_2)(y_1^2 + y_1 y_2 + y_2^2) + 2(y_1 - y_2) = 0 \Rightarrow (y_1 - y_2)(y_1^2 + y_1 y_2 + y_2^2 + 2) = 0$$

$$\rightarrow y_1 - y_2 = 0 \Rightarrow y_1 = y_2 \quad \checkmark$$

$$\rightarrow y_1^2 + y_1 y_2 + y_2^2 + 2 = 0 \Rightarrow \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{-y_2 \pm \sqrt{-3y_2^2 - 8}}{2} \quad \text{شماره رادیکال ثابت قبله نیست}$$

$$\text{تابع هست}$$

$$\text{الف) } x \sin y = y \sin x$$

$$x=0 \rightarrow y \in \mathbb{R} \times \quad \text{تابع نیست}$$

$$\text{ب) } \left(\sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}}\right)^2 = 2 \rightarrow \frac{x}{y} + \frac{y}{x} + 2\sqrt{\frac{x}{y} \cdot \frac{y}{x}} = 2 \rightarrow \frac{x^2 + y^2}{xy} = 2$$

$$x^2 + y^2 - 2xy = 0 \rightarrow (x - y)^2 = 0 \Rightarrow x = y \quad \checkmark$$

($x, y \neq 0$) ثابت نه

$$\text{تابع هست}$$

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$$(10-ب) \sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} = 2$$

ہیں عبارت تنہا زمانی بہ قرابت کہ $1 = \sqrt{\frac{x}{y}}$ بالذہیب

$$\sqrt{\frac{x}{y}} = 1 \leadsto \frac{x}{y} = 1 \leadsto x = y \text{ و } (x, y \neq 0)$$

