

نام و نام خانوادگی پاسخنامه تشریحی تکلیف شماره کلاس پایه هفتم (موضوع)

الف) $4x^2 - 5x - 4 = 0 \rightarrow x^2 - 5x - 4 = 0 \rightarrow (x-9)(x+4) = 0 \rightarrow x = 9, -4$
 ب) $x^2 - 8x - 9 = 0 \rightarrow x^2 - 8x - 9 = 0 \rightarrow (x-9)(x+1) = 0 \rightarrow x = 9, -1$
 ج) $x^2 - 7x - 12 = 0 \rightarrow x^2 - 7x - 12 = 0 \rightarrow (x-9)(x+2) = 0 \rightarrow x = 9, -2$
 د) $x^2 - 5x - 12 = 0 \rightarrow x^2 - 5x - 12 = 0 \rightarrow (x-8)(x+3) = 0 \rightarrow x = 8, -3$

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الف) $x^2 - 5x - 12 = 0 \rightarrow (x-7)(x+2) = 0 \rightarrow x = 7, -2$
 ب) $x^2 + 5x + 6 = 0 \rightarrow x^2 + 5x + 6 = 0 \rightarrow (x+2)(x+3) = 0 \rightarrow x = -2, -3$
 ج) $x^2 + 2x + 3 = 0 \rightarrow D = b^2 - 4ac = 4 - 12 < 0$ معادله در حقیقت ندارد $\rightarrow$ هیچ جوابی
 د) $3x^2 + 2x - 1 = 0 \rightarrow D = b^2 - 4ac = 4 + 12 = 16 \quad x = \frac{-b \pm \sqrt{D}}{2a} = \frac{-2 \pm 4}{6} = \frac{-2+4}{6}, \frac{-2-4}{6}$

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

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الف) $f(x) = \{(\frac{1}{2}m^2), (2, 1), (-\frac{1}{2}m), (-2, m), (\frac{1}{2}m+1), (m, 4)\} \Rightarrow \overline{m} = -1$
 $m^2 = m+1 \rightarrow m^2 - m - 1 = 0 \rightarrow (m-2)(m+1) = 0 \rightarrow m = 2, -1$
 $m=2 \rightarrow (\frac{1}{2} \cdot 4), (2, 1), (-\frac{1}{2} \cdot 2), (-2, 2), (\frac{1}{2} \cdot 2 + 1), (2, 4) \times$ غلط
 $m=-1 \rightarrow (\frac{1}{2} \cdot 1), (2, 1), (-\frac{1}{2} \cdot (-1)), (-2, -1), (\frac{1}{2} \cdot (-1) + 1), (-1, 4) \checkmark$

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ب) $g(x) = \{(\frac{1}{2}m^2), (2, 1), (m, 4), (\frac{1}{2}m+1), (-2, m), (-1, 3)\} \Rightarrow$ بازه صحیح ندارد
 $m^2 = m+1 \rightarrow m^2 - m - 1 = 0 \rightarrow m = 2, -1$
 $m=2 \rightarrow (\frac{1}{2} \cdot 4), (2, 1), (2, 4), (\frac{1}{2} \cdot 2 + 1), (-2, 2), (-1, 3) \times$ غلط
 $m=-1 \rightarrow (\frac{1}{2} \cdot 1), (2, 1), (-1, 4), (\frac{1}{2} \cdot (-1) + 1), (-2, -1), (-1, 3) \times$

$f(x) = \{(1, a^2), (1, \frac{1}{2}a+1), (a^2, \frac{1}{2}a+1)\}$
 $a^2 = \frac{1}{2}a+1 \rightarrow a^2 - \frac{1}{2}a - 1 = 0 \rightarrow (a-1)(a+2) = 0 \rightarrow a = 1, -2$
 $a=1 \rightarrow (1, 1), (1, 1), (1, 1) \times$ غلط
 $a=-2 \rightarrow (1, 4), (1, 4), (4, 1)$

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$$f(x) = \begin{cases} x^p - 1 & x < 1 \\ ax + b & 1 \leq x \leq p \\ x^p & x > p \end{cases} \quad \begin{aligned} x=1 &\rightarrow 0 = a+b \rightarrow -a-b=0 \\ x=p &\rightarrow pa+b=1 \rightarrow \underline{ra+b=1} \\ &\quad \underline{a=1, b=-1} \\ ax+b &= 1x-1 = [-1, 1] \end{aligned}$$

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$$f(x) = \begin{cases} px - 10 & x > K \\ K - px & x \leq K \end{cases} \quad \begin{aligned} x=K &\rightarrow pK - 10 = K - pK \\ \omega K &= \sqrt{K} = \frac{V}{\omega} \end{aligned}$$

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الف) $y^3 - 4y = x^p - 4x + 10 \xrightarrow{x=1} y^3 - 4y = 0 \rightarrow y(y^2 - 4) = 0 \rightarrow y = 0, \pm 2 \Rightarrow$ تابع نیست

ب) $|x| + |y| = 10 \rightarrow x = 1 \rightarrow |y| = 9 \rightarrow y = \pm 9 \Rightarrow$ تابع نیست

ج) $|y| = \sqrt{1 - \cos x} \rightarrow \cos x = \frac{1}{p} \rightarrow |y| = \sqrt{\frac{1}{p}} \rightarrow |y| = \frac{1}{\sqrt{p}} \rightarrow y = \pm \frac{1}{\sqrt{p}} \Rightarrow$ تابع نیست

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د) $y^p + x^p + px + 1 = 0 \rightarrow y^p + (x+1)^p = 0$
 $y=0 \rightarrow x+1=0 \rightarrow x=-1 \Rightarrow$ یک نقطه است $\Rightarrow$ تابع نیست

ه) $\sqrt[3]{y} + x^p = px - p \rightarrow \sqrt[3]{y_1} + x^p = px - p \rightarrow \sqrt[3]{y_1} = -x^p + px - p$
 $\sqrt[3]{y_2} + x^p = px - p \rightarrow \sqrt[3]{y_2} = -x^p + px - p \rightarrow \sqrt[3]{y_1} = \sqrt[3]{y_2} \xrightarrow{\text{فرض}} y_1 = y_2$
 تابع است.

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ب) $y'' + 2y = ax$

$y_1'' + 2y_1 = ax$
 $y_2'' + 2y_2 = ax$
 $y_1'' - y_2'' = 2y_2 - 2y_1 \rightarrow y_1'' - y_2'' = 2y_2 - 2y_1$
 $(y_1 - y_2)(y_1^2 + y_1y_2 + y_2^2) = -2(y_1 - y_2) \rightarrow (y_1 - y_2)(y_1^2 + y_1y_2 + y_2^2 + 2) = 0$
 $y_1 - y_2 = 0 \rightarrow y_1 = y_2 \Rightarrow$ تابع است

ج) $x \sin y = y \sin x \xrightarrow{x=0} 0 \times \sin y = y \times \sin(0) \rightarrow y \in \mathbb{R} \Rightarrow$ تابع نیست
 هر مقدار از y برای $x=0$ صدق می‌کند

د) $\sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} = p$

$t = \sqrt{\frac{x}{y}} \Rightarrow t + \frac{1}{t} = p \rightarrow t^2 + 1 = pt \rightarrow t^2 - pt + 1 = 0 \rightarrow (t-1)^2 = 0 \rightarrow t=1$
 $\sqrt{\frac{x}{y}} = 1 \rightarrow \frac{x}{y} = 1 \rightarrow y = x \xrightarrow{\text{دارای همه فقط } y \neq 0 \text{ و } x \neq 0} \text{تابع است.}$

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