

۲. آفرین

ارشیانیز دی یازدم سیر B

الف) $x^2 - 5x - 1 = 0 \Rightarrow x^2 - 5x - 36 = 0 \Rightarrow (x-9)(x+4) = 0 \Rightarrow x = \frac{9}{1} = 9$ - ۱
 $= -\frac{4}{1} = -4$
 ب) $3x^2 - 11x - 2 = 0 \Rightarrow x^2 - 11x - 9 = 0 \Rightarrow (x-9)(x+1) = 0 \Rightarrow x = \frac{9}{1} = 9$
 $= -\frac{1}{1} = -1$
 ج) $4x^2 - 4x - 3 = 0 \Rightarrow x^2 - 4x - 12 = 0 \Rightarrow (x-6)(x+2) = 0 \Rightarrow x = \frac{6}{1} = 6$
 $= -\frac{2}{1} = -2$
 د) $2x^2 - 5x - 12 = 0 \Rightarrow x^2 - 5x - 24 = 0 \Rightarrow (x-8)(x+3) = 0 \Rightarrow x = \frac{8}{1} = 8$
 $= -\frac{3}{1} = -3$

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الف) $x^2 - 5x - 12 = 0 \Rightarrow (x-7)(x+2) = 0 \Rightarrow x = \frac{7}{1} = 7$
 $= -\frac{2}{1} = -2$

ب) $2x^2 + 5x + 3 = 0 \Rightarrow a+c=b \Rightarrow x = \frac{-1}{1} = -1$
 $= -\frac{3}{1} = -3$

ج) $x^2 + 2x + 3 = 0 \Rightarrow \Delta = b^2 - 4ac \Rightarrow 4 - 12 = -8$ ریشه های حقیقی ندارد

د) $3x^2 + 3x - 2 = 0 \Rightarrow \Delta = 9 + 24 = 33$
 $x = \frac{-3 \pm \sqrt{33}}{6}$

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

الف) $\Rightarrow m^2 = m + 2 \Rightarrow m^2 - m - 2 = 0 \Rightarrow (m-2)(m+1) = 0 \Rightarrow m = \frac{2}{1} = 2$ یا $m = -1$

ب) $\Rightarrow m^2 = m + 2 \Rightarrow m = \frac{2}{1} = 2$ یا $m = -1$ هیچ مقدار

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$a^2 = 3a - 2 \Rightarrow a^2 - 3a + 2 = 0 \Rightarrow a = \frac{1}{1} = 1$ یا $a = \frac{2}{1} = 2$

$$\left. \begin{aligned} \text{از } n=1 &\Rightarrow n^2-1=an+b \Rightarrow a+b=0 \\ \text{از } n=2 &\Rightarrow n^2=an+b \Rightarrow 1=2a+b \end{aligned} \right\} \Rightarrow a=1 \text{ و } b=-1 \Rightarrow ab=-1$$

$$\text{از } n=k \Rightarrow 2n-3=f-3n \Rightarrow 2k-3=f-3k \Rightarrow 5k=f \Rightarrow k=\frac{f}{5}$$

$$\begin{aligned} \text{الف)} \quad y^3-4y &= n^2-4n+3 \Rightarrow \left. \begin{aligned} y_1^3-4y_1 &= n_1^2-4n_1+3 \\ y_2^3-4y_2 &= n_2^2-4n_2+3 \end{aligned} \right\} \xrightarrow{n_1=n_2} y_1^3-4y_1 = y_2^3-4y_2 \\ \Rightarrow (y_1-y_2)(y_1^2+2y_1y_2+y_2^2-4y_1-4y_2+3) &= 0 \Rightarrow (y_1-y_2)(y_1^2+2y_1y_2+y_2^2-4y_1-4y_2+3) = 0 \end{aligned}$$

$$\text{ب)} \quad |n|+|y|=3 \xrightarrow{n=0} y = \pm 3 \quad \text{تابع نیست} \quad \Delta > 0 \Rightarrow \text{چند جواب دارد}$$

$$\text{ج)} \quad |y| = \sqrt{1-\cos n} \Rightarrow -1 \leq \cos n \leq 1 \Rightarrow |y| = \pm y \Rightarrow \text{تابع زوج} \Rightarrow |y| = \sqrt{2} \Rightarrow y = \pm \sqrt{2} \quad \text{تابع نیست}$$

$$\text{د)} \quad y^2 + n^2 + 2n + 1 = 0 \Rightarrow y^2 + (n+1)^2 = 0 \Rightarrow n = -1, y = 0 \quad \text{تابع است}$$

$$\begin{aligned} \text{الف)} \quad \sqrt[3]{y} + n^2 &= 2n-2 \Rightarrow \sqrt[3]{y} = -n^2+2n-2 \Rightarrow \left. \begin{aligned} \sqrt[3]{y_1} &= -n_1^2+2n_1-2 \\ \sqrt[3]{y_2} &= -n_2^2+2n_2-2 \end{aligned} \right\} \xrightarrow{n_1=n_2} \sqrt[3]{y_1} = \sqrt[3]{y_2} \\ \Rightarrow \sqrt[3]{y_1} &= \sqrt[3]{y_2} \Rightarrow y_1 = y_2 \quad \text{تابع است} \end{aligned}$$

$$\begin{aligned} \text{ب)} \quad y^3+2y &= 5n \Rightarrow \left. \begin{aligned} y_1^3+2y_1 &= 5n_1 \\ y_2^3+2y_2 &= 5n_2 \end{aligned} \right\} \xrightarrow{n_1=n_2} y_1^3+2y_1 = y_2^3+2y_2 \Rightarrow y_1^3+2y_1-y_2^3-2y_2=0 \\ \Rightarrow (y_1-y_2)(y_1^2+2y_1y_2+y_2^2+2y_1+2y_2) &= 0 \Rightarrow (y_1-y_2)(y_1^2+2y_1y_2+y_2^2+2y_1+2y_2) = 0 \\ \Rightarrow y_1 &= y_2 \quad \text{تابع است} \end{aligned}$$

$$\text{الف)} \quad n \sin y = y \sin n \xrightarrow{n=0} 0 \times \sin y = y \times 0 \Rightarrow y = \mathbb{R} \quad \text{تابع نیست}$$

$$\begin{aligned} \text{ب)} \quad \sqrt{\frac{n}{y}} + \sqrt{\frac{y}{n}} &= 2 \Rightarrow \frac{\sqrt{n}}{\sqrt{y}} + \frac{\sqrt{y}}{\sqrt{n}} = 2 \Rightarrow \frac{n^2+y^2}{n^2y} - 2 = 0 \Rightarrow n^2+y^2-2ny=0 \\ \Rightarrow (n-y)^2 &= 0 \Rightarrow n=y \quad \text{تابع است} \end{aligned}$$

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

این عبارت تنها زمانی به قدر است که $1 = \sqrt{\frac{x}{y}}$ باشد پس

$$\sqrt{\frac{x}{y}} = 1 \Rightarrow \frac{x}{y} = 1 \Rightarrow x = y \quad (x, y \neq 0)$$

