

الف) $x^2 - 5x - 36 = 0 \Rightarrow (x+4)(x-9) \rightarrow$ ریشه ها $= 9$ و $-4 \Rightarrow \frac{9}{4}$ و $-\frac{4}{9}$

ب) $x^2 - 8x - 9 = 0 \Rightarrow (x+1)(x-9) \rightarrow$ ریشه ها $= -1$ و $9 \Rightarrow -\frac{1}{9}$ و 9

ج) $x^2 - 4x - 12 = 0 \Rightarrow (x+2)(x-6) \rightarrow$ ریشه ها $= -2$ و $6 \Rightarrow -\frac{1}{6}$ و $\frac{6}{1}$

د) $x^2 - 5x - 24 = 0 \Rightarrow (x+3)(x-8) \rightarrow$ ریشه ها $= -3$ و $8 \Rightarrow -\frac{3}{8}$ و 8

الف) $(x+2)(x-5) \rightarrow$ ریشه ها $= -2$ و 5

ب) $x^2 + 5x + 6 = 0 \Rightarrow (x+2)(x+3) \rightarrow$ ریشه ها $= -2$ و $-3 \Rightarrow \frac{2}{3}$

ج) $x^2 - 12 = -8 \Rightarrow \Delta < 0$ ریشه ندارد

د) $9 + 24 = 33 \quad \frac{-2 \pm \sqrt{40}}{2}$

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

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

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

الف) $m^2 = m + 2 \quad m^2 - m - 2 = 0 \quad \frac{1 \pm 3}{2} = \begin{bmatrix} 2 \\ -1 \end{bmatrix}$

$m = 2 \rightarrow \{(3,4)(2,1)(-3,2)(-2,3)(3,4)(2,4)\} \times$
 $m = -1 \rightarrow \{(3,4)(2,1)(-3,-1)(-2,-1)(3,1)(-1,4)\} \checkmark \Rightarrow m = -1$

ب) $m^2 = m + 2 \quad m^2 - m - 2 = 0 \quad \frac{1 \pm 3}{2} = \begin{bmatrix} 2 \\ -1 \end{bmatrix}$
 $m = 2 \rightarrow \{(3,4)(2,1)(2,4)(3,4)(-2,2)(-1,3)\}$
 $m = -1 \rightarrow \{(3,4)(2,1)(-2,4)(3,1)(-2,-1)(-1,3)\}$ هیچ مقداری ندارد

$a^2 = 3a - 2 \quad a^2 - 3a + 2 = 0 \quad \frac{3 \pm 1}{2} = \begin{bmatrix} 2 \\ 1 \end{bmatrix}$

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

$\Rightarrow a = 2$

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

$$n=1: a+b=0$$

$$n=2: 2a+b=1$$

...

$$a \times b = -56$$

$$-a-b=0$$

$$2a+b=1$$

$$a=1$$

$$b=-1$$

✓

$$n=k: 2k-1 = 1-3k$$

$$5k=1 \Rightarrow k=\frac{1}{5}$$

✓

$$n=0: y^2-y=0 \Rightarrow x$$

$$n=1: |y|=1 \Rightarrow y=\pm 1 \times$$

$$n=2: \sqrt{1-0} \quad 1=|y| \Rightarrow y=\pm 1 \times$$

$$n=3: y^2+(n+1)^2=0 \rightarrow (-1,0) \checkmark$$

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$$\text{الف) } \begin{cases} \sqrt{y_1} = -n^2 + 2n - 2 \\ \sqrt{y_2} = -n^2 + 2n - 2 \end{cases} \rightarrow \sqrt{y_1} = \sqrt{y_2} \rightarrow y_1 = y_2 \quad \text{تابع است}$$

$$\text{ب) } \begin{cases} y_1^2 + 2y_1 = 2n \\ y_2^2 + 2y_2 = 2n \end{cases} \rightarrow y_1^2 - y_2^2 = 2y_2 - 2y_1$$

$$(y_1 - y_2)(y_1 + y_2 + y_2 + y_1) = -2(-y_2 + y_1)$$

$$(y_1 - y_2)(y_1^2 + y_1 y_2 + y_2^2 + 2) = 0 \rightarrow \begin{cases} 1 \rightarrow y_1 = y_2 \\ 2 \rightarrow \Delta < 0 \end{cases} \quad \text{تابع است}$$

①

②

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$$\text{الف) } n=0 \rightarrow \overbrace{0 \times \sin y}^0 = \overbrace{y \times 0}^0 \Rightarrow y \in \mathbb{R} \quad \text{تابع نیست}$$

$$\text{ب) } n, y \neq 0 \quad \text{هم علامت} \quad \sqrt{\frac{n}{y}} = \alpha \Rightarrow \sqrt{\frac{y}{n}} = \frac{1}{\alpha}$$

$$\alpha + \frac{1}{\alpha} = 2 \xrightarrow{\text{طرفین} \times \alpha} \alpha^2 + 1 - 2\alpha = 0 \quad (\alpha - 1)^2 = 0 \Rightarrow \alpha = 1 = \sqrt{\frac{n}{y}} \quad \frac{n}{y} = 1 \Rightarrow n = y \quad \text{تابع همنامی}$$

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