

مؤان باقى / ياردهم (خند) / تليف سماره 1

$$9x^2 - 5x - 4 = 0$$

$$x^2 - 5x - 16 = 0$$

$$(x-9)(x+K) = 0$$

$\frac{9}{9} \leftarrow \quad \frac{-K}{-4}$

$$\left. \begin{array}{l} x_1 = 1,5 \\ x_2 = -\frac{2}{3} \end{array} \right\} \text{الف (1)}$$

$$13x^2 - 11x - 10 = 0$$

$$x^2 - 11x - 9 = 0$$

$$(x-9)(x+1) = 0$$

$\frac{9}{13} \leftarrow \frac{-1}{-11}$

$$\left. \begin{array}{l} x_1 = 10 \\ x_2 = -\frac{1}{11} \end{array} \right\} \text{ب (1)}$$

$$17x^2 - 17x - 10 = 0$$

$$x^2 - 17x - 12 = 0$$

$$(x-9)(x+2) = 0$$

$\frac{9}{17} \leftarrow \frac{-2}{-17}$

$$\left. \begin{array}{l} x_1 = \frac{10}{17} = 1,5 \\ x_2 = -\frac{1}{17} \end{array} \right\} \text{ج (2)}$$

$$19x^2 - 5x - 12 = 0$$

$$x^2 - 5x - 24 = 0$$

$$(x-1)(x+3) = 0$$

$\frac{1}{19} \leftarrow \frac{-3}{-5}$

$$\left. \begin{array}{l} x_1 = 3 \\ x_2 = -\frac{10}{19} = -1,5 \end{array} \right\} \text{د (2)}$$

$$x^2 - 5x - 12 = (x-1)(x+3) = 0 \Rightarrow x_1 = 1, x_2 = -3 \text{ الف (2)}$$

$$19x^2 + 5x + 10 = 0$$

$$x^2 + 5x + 9 = 0$$

$$(x+2)(x+10) = 0$$

$\frac{-2}{19} \leftarrow \frac{-10}{5}$

$$x_1 = -1, x_2 = -1,5$$

ب (1)

$$x^2 + 2x + 10 = 0 \Rightarrow \Delta = b^2 - 4ac = 4 - 4(10) = -36 \quad \text{ج (2)}$$

$$\Delta < 0 \Rightarrow \text{ریشه ندارد}$$

$$\Delta = 9 - 4(-2)(10) = 81 \Rightarrow x_1 = \frac{-10 + \sqrt{81}}{4} / x_2 = \frac{-10 - \sqrt{81}}{4} \quad \text{د (2)}$$

(3)

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

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

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

(4)

$$(3, m^2)(3, m+2) \Rightarrow m^2 = m+2 \Rightarrow m = 2, -1 \text{ (ن)}$$

$$\text{if } m=2 \quad f(x) = \{(3, 2)(2, 1)(-3, 2)(-2, 2)(3, 2)(2, 2)\}$$

$$\text{if } m=-1 \quad f(x) = \{(3, 1)(2, 1)(-3, -1)(-2, -1)(3, 1)(-1, 2)\}$$

$$\Rightarrow m = -1$$

$$m^2 = m+2 \Rightarrow m = 2, -1$$

(ب) برای هیچ مقادیری

$$\text{if } m=2 \quad \{(3, 2)(2, 1)(2, 2)(3, 2)(-2, 2)(-1, 3)\} \Rightarrow X$$

$$\text{if } m=-1 \quad \{(3, 1)(2, 1)(-1, 2)(3, 1)(-2, -1)(-1, 3)\} \Rightarrow X$$

(5)

$$a^2 = 3a - 2 \Rightarrow a^2 - 3a + 2 = 0 \Rightarrow (a-2)(a-1) = 0$$

$$a=2 \quad \{(1, 2)(1, 2)(2, 1)\}$$

$$a=1 \quad \{(1, 1)(1, 1)(1, 2)\} \quad \left\{ \begin{array}{l} a=2 \checkmark \\ a=1 \checkmark \end{array} \right.$$

(6)

$$n=1 \Rightarrow (1)^2 - 1 = a+b \Rightarrow a+b=0 \Rightarrow b=-a$$

$$n=2 \Rightarrow 2a+b=1 \Rightarrow 2a-a=1 \Rightarrow a=1 \Rightarrow b=-1$$

$$a \times b = 1 \times -1 = -1$$

(7)

$$f(k) - 3 = k - 3(k) \Rightarrow 2k - 3 = k - 3k$$

$$2k = 3 \Rightarrow k = \frac{3}{2} = 1.5$$

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الف) $n=1 \Rightarrow n^2 - kn + 3 = 1 - k + 3 = 0 \times$ تابع نیست (1)

$y^3 - 4y = 0 \Rightarrow y^3 = 4y \Rightarrow y^2 = 4 \Rightarrow y = \pm \sqrt{4}$

ب) $n=1 \Rightarrow |1| + |y| = 3$

$|y| = 2 \Rightarrow y = \pm 2 \rightarrow$ تابع نیست $\times$

ج) $\cos n = -1 \Rightarrow |y| = \sqrt{2} \Rightarrow y = \pm \sqrt{2}$
تابع نیست $\times$

د) $y^2 + (n+1)^2 = 0 \quad \begin{matrix} -1 \\ 0 \end{matrix} \rightarrow$ تابع است $\checkmark$
(0) $\swarrow$ (-1)

الف) $\sqrt[3]{y} + n^2 = 2n - 2 \Rightarrow \sqrt[3]{y} = 2n - 2 - n^2$ تابع است. (4)
 $\left. \begin{matrix} \sqrt[3]{y_1} = 2n_1 - 2 - n_1^2 \\ \sqrt[3]{y_r} = 2n_r - 2 - n_r^2 \end{matrix} \right\} \xrightarrow{n_1 = n_r} \sqrt[3]{y_1} = \sqrt[3]{y_r} \Rightarrow y_1 = y_r$

ب) $\left. \begin{matrix} y_1^3 + 2y_1 = 2n_1 \\ y_r^3 + 2y_r = 2n_r \end{matrix} \right\} \xrightarrow{n_1 = n_r} y_1^3 + 2y_1 = y_r^3 + 2y_r$

$\rightarrow y_1^3 - y_r^3 = 2y_r - 2y_1$

$(y_1 - y_r)(y_1^2 + y_1 y_r + y_r^2) = 2(y_r - y_1) = -2(y_1 - y_r)$

$(y_1 - y_r)(y_1^2 + y_1 y_r + y_r^2) + 2(y_1 - y_r) = 0$

$(y_1 - y_r)(y_1^2 + y_1 y_r + y_r^2 + 2) = 0$

$\underbrace{(y_1 - y_r)}_{y_1 = y_r} \underbrace{(y_1^2 + y_1 y_r + y_r^2 + 2)}_{\Delta = -3y^2 - 1 \Rightarrow \Delta < 0} = 0 \Rightarrow y_1 = y_r$ تابع است.

الف) $n=0 \rightarrow y$ حد متناهی $\rightarrow$ تابع $\times$ (10)

ب) $\frac{2}{y} \rightarrow \frac{n}{y} + \frac{y}{n} + 2 = k \Rightarrow \frac{n^2 + y^2}{ny} = 2 \Rightarrow n^2 + y^2 - 2ny = 0$

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$(n - y)^2 = 0 \Rightarrow n = y \rightarrow$ تابع $\checkmark$