

الف) $6x^2 - 5x - 6 = 0 \Rightarrow x^2 - 5x - 36 = 0 \rightarrow \begin{cases} x_1 = 9/6 = 3/2 \\ x_2 = -4/6 = -2/3 \end{cases}$

ب) $3x^2 - 8x - 3 = 0 \Rightarrow x^2 - 8x - 9 = 0 \rightarrow \begin{cases} x_1 = -1/3 \\ x_2 = 9/3 = 3 \end{cases}$

پ) $4x^2 - 4x - 3 = 0 \Rightarrow x^2 - 4x - 12 = 0 \rightarrow \begin{cases} x_1 = 6/4 = 3/2 \\ x_2 = -2/4 = -1/2 \end{cases}$

ت) $2x^2 - 5x - 12 = 0 \Rightarrow x^2 - 5x - 24 = 0 \rightarrow \begin{cases} x_1 = 8/2 = 4 \\ x_2 = -3/2 \end{cases}$

دقت کن

الف) $x^2 - 5x - 14 = 0 \Rightarrow \alpha\beta = -14, \alpha + \beta = 5 \Rightarrow \alpha = 7, \beta = -2$

ب) $2x^2 + 5x + 3 = 0 \Rightarrow a+c=b \Rightarrow x_1 = -1, x_2 = -3/2$

پ) $x^2 + 2x + 3 = 0 \Rightarrow \Delta = b^2 - 4ac = 4 - 12 = -8 \rightarrow \Delta < 0$ ریشه ندارد

ت) $3x^2 + 3x - 2 = 0 \rightarrow \Delta = 9 + 24 = 33 \Rightarrow x = \frac{-3 \pm \sqrt{33}}{6}$
 $\begin{cases} x_1 = \frac{-3 + \sqrt{33}}{6} \\ x_2 = \frac{-3 - \sqrt{33}}{6} \end{cases}$

$A = \{1, 2, 3\}, B = \{2, 3\}$

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

$= \{(1, 2), (1, 3)\}$

الف) $f(x) = \{(3, m^2), (2, 1), (-3, m), (-2, m), (3, m+2), (m, 4)\}$

$m^2 = m + 2 \Rightarrow m^2 - m - 2 = 0 \rightarrow \begin{cases} m = 2 \text{ (X)} \\ m = -1 \text{ (✓)} \end{cases}$

ب) $g(x) = \{(3, m^2), (2, 1), (m, 4), (3, m+2), (-2, m), (-1, 3)\}$

$m^2 - m - 2 = 0 \rightarrow \begin{cases} m = 2 \text{ (X)} \\ m = -1 \text{ (X)} \end{cases}$
 در هر دو مورد جوابی ندارد.

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

$a^2 = 3a - 2 \Rightarrow a^2 - 3a + 2 = 0 \rightarrow \begin{cases} a = 1 \text{ (X)} \\ a = 2 \text{ (✓)} \end{cases}$

$$\text{if } \rightarrow m=1 \Rightarrow m^2-1 = a \cdot m + b \Rightarrow a+b=0 \Rightarrow a=-b$$

$$\text{if } \rightarrow m=2 \Rightarrow a^3 = a \cdot m + b \Rightarrow 2a + b = 8 \Rightarrow a=8$$

$$\Rightarrow b=-8$$

$$\Rightarrow \boxed{a \times b = -64}$$

$$\text{if } f(K) = m \Rightarrow f(K) = 2K-3 = 4-3K$$

$$\Rightarrow 5K = 7 \Rightarrow \boxed{K = \frac{7}{5}}$$

$$\text{الف} \rightarrow y^3 - 6y = m^2 - 4m + 3 \quad \text{if } m=3 \Rightarrow \left. \begin{array}{l} y^2 - 6 = 0 \Rightarrow y = \pm \sqrt{6} \\ y = 0 \end{array} \right\} \text{تایید}$$

$$\text{ب} \rightarrow \text{if } (m=2 \Rightarrow |y|=1 \Rightarrow y = \pm 1) \quad \text{تایید}$$

$$\text{پ} \rightarrow \text{if } (m=\sqrt{2} \Rightarrow |y|=1 \Rightarrow y = \pm 1) \quad \text{تایید}$$

$$\text{ت} \rightarrow y_1^2 = -(m^2 + 2m + 1), \quad y_1^2 + (m+1)^2 = 0 \Rightarrow y=0, m=-1 \rightarrow \text{تایید}$$

$$\text{الف} \rightarrow \sqrt[3]{y_1} + m_1^2 = 2m_1 - 2$$

$$\Rightarrow \left. \begin{array}{l} \sqrt[3]{y_1} = -m_1^2 + 2m_1 - 2 \\ \sqrt[3]{y_2} = -m_2^2 + 2m_2 - 2 \end{array} \right\} \text{if } m_1 = m_2 \Rightarrow \sqrt[3]{y_1} = \sqrt[3]{y_2} \Rightarrow y_1 = y_2$$

$$\text{تایید}$$

$$\left\{ \begin{array}{l} y_1^3 + 2y_1 = 5m_1 \\ y_2^3 + 2y_2 = 5m_2 \end{array} \right\} \Rightarrow y_1^3 + 2y_1 = y_2^3 + 2y_2 \Rightarrow (y_1^3 - y_2^3) + 2y_1 - 2y_2 = 0$$

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

$$\left\{ \begin{array}{l} y_1 = y_2 \Rightarrow \text{تایید} \\ y_1^2 + y_1 y_2 + y_2^2 + 2 = 0 \end{array} \right. \Rightarrow \Delta < 0$$

$$\text{الف} \rightarrow m \sin y = y \sin m \Rightarrow \text{if } m=0 \Rightarrow \text{هر مقدار } y \text{ بران } y=0$$

$$\rightarrow 0 \times \sin y = y \times 0 \Rightarrow y \rightarrow \boxed{\mathbb{R}}$$

$$\text{تایید}$$

$$10 \text{ ب} \rightarrow \sqrt{\frac{m}{y}} + \sqrt{\frac{y}{m}} = 2 \Rightarrow m=y \neq 0$$

$$\Rightarrow \text{تایید}$$

$$(2-\text{الف}) \quad x^2 - 5x - 14 = 0 \quad \xrightarrow{\text{حجده مشترك}} \quad (x-7)(x+2) = 0 \quad \rightarrow \begin{aligned} & x_1 = 7 \\ & x_2 = -2 \end{aligned}$$