

الف) $x^2 - 9x - 14 = 0 \Rightarrow (x-14)(x+1) = 0 \rightarrow x = \frac{14}{1} = 14$
 $x = -\frac{1}{1} = -1$ ✓
 ب) $x^2 - 11x - 12 = 0 \Rightarrow (x-12)(x+1) = 0 \rightarrow x = \frac{12}{1} = 12$
 $x = -\frac{1}{1} = -1$ ✓
 ج) $x^2 - 5x - 12 = 0 \Rightarrow (x+2)(x-6) = 0 \rightarrow x = -\frac{2}{1} = -2$
 $x = \frac{6}{1} = 6$ ✓
 د) $x^2 - 5x - 14 = 0 \Rightarrow (x-7)(x+2) = 0 \rightarrow x = \frac{7}{1} = 7$
 $x = -\frac{2}{1} = -2$ ✓

الف) $x^2 - 5x - 14 = 0 \Rightarrow (x-7)(x+2) = 0 \rightarrow x = \frac{7}{1} = 7$
 $x = -\frac{2}{1} = -2$ ✓
 ب) $2x^2 + 5x + 3 = 0 \Rightarrow x^2 + 2.5x + 1.5 = 0 \Rightarrow (x+1)(x+1.5) = 0 \rightarrow x = -\frac{1}{1} = -1$
 $x = -\frac{1.5}{1} = -1.5$ ✓
 ج) $x^2 + 2x + 3 = 0 \Rightarrow x^2 + 2x + 1 = -3 + 1 \Rightarrow (x+1)^2 = -2$ جواب حقیقی ندارد!
 د) $3x^2 + 3x - 2 = 0 \Rightarrow \Delta = 9 - 4(3)(-2) = 33 \rightarrow x = \frac{-3 \pm \sqrt{33}}{6}$

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

الف) $m^2 = m + 2 \Rightarrow m^2 - m - 2 = 0 \rightarrow m = -1$ ✓
 $m = 2$ نمی تواند باشد. $(2,1)(2,4) \times$
 ب) $m^2 = m + 2 \Rightarrow m^2 - m - 2 = 0 \rightarrow m = -1$ نمی تواند باشد. $(-1,3)(-1,4) \times$
 $m = 2$ نمی تواند باشد. $(2,1)(2,4) \times$

$a^2 = 3a - 2 \Rightarrow a^2 - 3a + 2 = 0 \rightarrow a = 1$ نمی تواند باشد. $(1,1)(1,4)(4,1)$
 $a = 2$ ✓ $(2,4)(4,4)(4,2)$

$$\begin{aligned} x=1 &\Rightarrow 1-t=a+b \\ x=2 &\Rightarrow 2a+b=1 \end{aligned} \Rightarrow \begin{cases} a+b=0 \\ 2a+b=1 \end{cases} \Rightarrow a=1 \quad b=-1$$

$$a \times b = -1 \quad \text{P}$$

$$x=k \Rightarrow 2k-3=5-3k$$

$$5k=8$$

$$k=\frac{8}{5} \quad \text{P}$$

$$\text{الف) } y^3 \ominus y = x^2 - 5x + 3 \quad \text{X}$$

$$\text{ب) } |x| + |y| = 3 \quad x=0 \quad |y|=3 \quad y=\pm 3 \quad \text{X}$$

$$\text{ج) } |y| = \sqrt{1 - \cos x} \quad \cos x = 0 \Rightarrow x = 90^\circ \quad |y| = 1 \quad y = \pm 1 \quad \text{X}$$

$$\text{د) } y^2 + x^2 + 2x + 1 = 0 \quad y^2 + (x+1)^2 = 0 \quad x+1=0 \quad x=-1 \quad y=0 \quad (-1, 0) \quad \text{P}$$

$$\text{الف) } \sqrt[3]{y} + x^2 = 2x - 1 \Rightarrow \begin{cases} \sqrt[3]{y_1} + x_1^2 - 1 = 2x_1 \\ \sqrt[3]{y_2} + x_2^2 - 1 = 2x_2 \end{cases} \xrightarrow{x_1=x_2} \begin{cases} \sqrt[3]{y_1} + x_1^2 - 1 = \sqrt[3]{y_2} + x_1^2 - 1 \\ \sqrt[3]{y_1} = \sqrt[3]{y_2} \Rightarrow y_1 = y_2 \quad \text{P} \end{cases}$$

$$\text{ب) } y^3 + 2y = \omega x \quad y_1^3 + 2y_1 = \omega x_1 \quad y_2^3 + 2y_2 = \omega x_2 \quad x_1=x_2 \Rightarrow y_1^3 + 2y_1 - y_2^3 - 2y_2 = 0 \quad \text{P}$$

$$\text{الف) } x \sin y = y \sin x \quad x=0 \quad y \sin 0 = 0 \quad y=1, 2, \dots$$

$$\text{ب) } \sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} = 2 \quad \frac{x}{y} = 1 \Rightarrow x=y \quad \text{P}$$

$$x, y \neq 0$$

