

الف) $x^2 - 9x - 14 = 0 \Rightarrow (x-9)(x+1) = 0 \rightarrow x = \frac{9}{1} = 9$
 $\rightarrow x = -\frac{1}{1} = -1$

ب) $x^2 - 11x - 9 = 0 \Rightarrow (x-9)(x+1) = 0 \rightarrow x = \frac{9}{1} = 9$
 $\rightarrow x = -\frac{1}{1} = -1$

ج) $x^2 - 5x - 12 = 0 \Rightarrow (x+2)(x-6) = 0 \rightarrow x = -\frac{2}{1} = -2$
 $\rightarrow x = \frac{6}{1} = 6$

د) $x^2 - 5x - 14 = 0 \Rightarrow (x-7)(x+2) = 0 \rightarrow x = \frac{7}{1} = 7$
 $\rightarrow x = -\frac{2}{1} = -2$

الف) $x^2 - 5x - 14 = 0 \Rightarrow (x-7)(x+2) = 0 \rightarrow x = \frac{7}{1} = 7$
 $\rightarrow x = -\frac{2}{1} = -2$

ب) $2x^2 + 5x + 3 = 0 \Rightarrow x^2 + 2.5x + 1.5 = 0 \Rightarrow (x+2)(x+1) = 0 \rightarrow x = -\frac{2}{1} = -2$
 $\rightarrow x = -\frac{1}{1} = -1$

ج) $x^2 + 2x + 3 = 0 \Rightarrow x^2 + 2x + 1 = -3 + 1 \Rightarrow (x+1)^2 = -2$ جواب حقیقی ندارد!

د) $3x^2 + 3x - 2 = 0 \Rightarrow \Delta = 9 - 4(3)(-2) = 33 \quad x = \frac{-3 \pm \sqrt{33}}{6}$

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

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

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

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

$a^2 = 3a - 2 \Rightarrow a^2 - 3a + 2 = 0 \rightarrow a = 1$ نمی تواند باشد. $(1,1)(1,4)(4,1)$
 $\rightarrow a = 2$ ✓ $(1,4)(4,1)(4,8)$

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

$$a \times b = -1$$

$$\begin{aligned} n=k &\Rightarrow 2k-3=5-3k \\ \Delta k &= V \\ k &= \frac{V}{\omega} \end{aligned}$$

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

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

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

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

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

$$\begin{aligned} \text{ب) } y^3 + 2y &= \omega x \checkmark \quad \begin{cases} y_1^3 + 2y_1 = \omega x_1 \\ y_2^3 + 2y_2 = \omega x_2 \end{cases} \xrightarrow{x_1=x_2} \begin{cases} y_1^3 + 2y_1 = y_2^3 + 2y_2 \\ y_1^3 + 2y_1 - y_2^3 - 2y_2 = 0 \\ y_1(y_1^2 + 2) + y_2(-y_2^2 - 2) = 0 \end{cases} \end{aligned}$$

$$\text{الف) } x \sin y = y \sin x \quad X \quad x=0$$

$$y \sin 0 = 0 \quad y = 1, 2, \dots$$

$$\begin{aligned} y_1(y_1^2 + 2) &= 0 \rightarrow y_1 = 0 \\ y_2(-y_2^2 - 2) &= 0 \rightarrow y_2 = 0 \\ y_1 &= y_2 = 0 \end{aligned}$$

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

