

الف) $x^2 - 5x - 24 = 0 \Rightarrow (x-9)(x+4) = 0 \Rightarrow \begin{cases} x_1 = 9 \rightarrow \frac{9}{2} = \frac{3}{2} \\ x_2 = -4 \rightarrow \frac{-4}{2} = -2 \end{cases}$

ب) $x^2 - 11x - 9 = 0 \Rightarrow (x-9)(x+1) = 0 \Rightarrow \begin{cases} x_1 = 9 \rightarrow \frac{9}{2} = \frac{3}{2} \\ x_2 = -1 \rightarrow \frac{-1}{2} = -\frac{1}{2} \end{cases}$

ج) $x^2 - 5x - 12 = 0 \Rightarrow (x-9)(x+2) = 0 \Rightarrow \begin{cases} x_1 = 9 \rightarrow \frac{9}{2} = \frac{3}{2} \\ x_2 = -2 \rightarrow \frac{-2}{2} = -1 \end{cases}$

د) $x^2 - 5x - 24 = 0 \Rightarrow (x-9)(x+4) = 0 \Rightarrow \begin{cases} x_1 = 9 \rightarrow \frac{9}{2} = \frac{3}{2} \\ x_2 = -4 \rightarrow \frac{-4}{2} = -2 \end{cases}$

الف) $(x-7)(x+2) \rightarrow \begin{cases} x_1 = 7 \\ x_2 = -2 \end{cases}$ ج) $(x+1)(x+2) \rightarrow \begin{cases} x_1 = -1 \\ x_2 = -2 \end{cases}$

ب) $x^2 + 5x + 6 = 0 \Rightarrow (x+4)(x+1) \rightarrow \begin{cases} x_1 = -4 \\ x_2 = -1 \end{cases}$ $\Delta = \frac{b^2 \pm \sqrt{b^2 - 4ac}}{2a}$

$A \times B \Rightarrow \{(1,2), (1,3), (2,2), (2,3), (3,2), (3,3)\}$ $B^c \Rightarrow \{(2,2), (2,3), (3,2), (3,3)\}$

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

الف) $m^2 = m+2 \Rightarrow m^2 - m - 2 \rightarrow \begin{cases} m_1 = 2 \\ m_2 = -1 \end{cases} \Rightarrow m = -1$

ب) $m^2 = m+2 \Rightarrow m^2 - m - 2 \rightarrow \begin{cases} m_1 = 2 \\ m_2 = -1 \end{cases} \Rightarrow m = 2$

$a^2 = 2a - 2 \Rightarrow a^2 - 2a + 2 = 0 \rightarrow \begin{cases} a_1 = 1 \\ a_2 = 2 \end{cases} \Rightarrow a = 2$

احتمال

$$x=1 \Rightarrow x^2-1 = ax+b \Rightarrow 0 = a+b \quad x=2 \Rightarrow ax+b = x^2 \Rightarrow 4a+b=1$$

$$\begin{cases} a+b=0 \\ 4a+b=1 \end{cases} \Rightarrow \begin{cases} a=1 \\ b=-1 \end{cases} \quad a \neq b = 1 \neq -1 = -4 \quad \text{تابع نیست}$$

$$x=k \Rightarrow 2x-2 = 4-2x \Rightarrow 2k-2 = 4-2k \Rightarrow 4k=6 \Rightarrow k=\frac{3}{2} \quad \text{تابع نیست}$$

$$\text{الف) } x=1 \Rightarrow y^2-y=0 \Rightarrow y(y-1)=0 \Rightarrow \begin{cases} y=0 \\ y=1 \end{cases} \quad \text{تابع نیست}$$

$$\text{ب) } x=0 \Rightarrow |y|=2 \Rightarrow \begin{cases} y=2 \\ y=-2 \end{cases} \quad \text{تابع نیست}$$

$$\text{ج) } \cos x = 0 \Rightarrow |y|=1 \Rightarrow y=1 \text{ یا } y=-1 \quad \text{تابع نیست} \quad (1 \geq \cos x \geq -1)$$

$$\text{د) } y^2 + (x+1)^2 = 0 \Rightarrow y=0 \text{ و } x=-1 \quad \text{تابع نیست}$$

$$\text{الف) } \sqrt{y} = 2x-2-x^2 \quad \text{تابع نیست}$$

$$\text{ب) } y^2 + 2y = 2x \Rightarrow \begin{cases} y_1^2 + 2y_1 = 2x \\ y_2^2 + 2y_2 = 2x \end{cases} \Rightarrow y_1^2 - y_2^2 + 2y_1 - 2y_2 = 0 \Rightarrow (y_1 - y_2)(y_1 + y_2 + 2) = 0 \Rightarrow y_1 = y_2 \quad \text{تابع نیست}$$

$$\text{الف) } x=0 \Rightarrow 0 \neq \sin y = y \sin 0 \Rightarrow \sin 0 = 0 \Rightarrow 0=0 \quad \text{تابع نیست}$$

$$\text{ب) } \sqrt{\frac{x}{y}} = \frac{1}{\sqrt{\frac{x}{y}}} \Rightarrow t = \sqrt{\frac{x}{y}} \Rightarrow t + \frac{1}{t} = 2 \Rightarrow t^2 - 2t + 1 = 0 \Rightarrow (t-1)^2 = 0 \Rightarrow t=1 \quad \text{تابع نیست}$$

$$\sqrt{\frac{x}{y}} = 1 \Rightarrow \frac{x}{y} = 1 \Rightarrow x=y, (x \neq 0)$$