

الف) $4x^2 - 4x - 4 = 0 \rightarrow x^2 - x - 1 = 0$ ب) $x^2 - 11x - 9 = 0$ ج) $x^2 - 6x - 2 = 0$ د) $2x^2 - 4x - 12 = 0$

$\Rightarrow (x-4)(x+1) = 0$ $\rightarrow x^2 - 11x - 9 = 0 \rightarrow a+c=b$ $\rightarrow x^2 - 6x - 2 = 0 \rightarrow$ $\rightarrow x^2 - 4x - 12 = 0$

$\rightarrow x=4, -1$ $\rightarrow x_1 = -1, x_2 = 9$ $(x-4)(x+2) = 0 \rightarrow x=4, -2$ $\rightarrow (x-1)(x+3) = 0$

$\rightarrow x=4, -\frac{1}{4}$ $\rightarrow x_1 = -\frac{1}{2}, x_2 = 2$ $\rightarrow x = \frac{3}{2}, -\frac{5}{2}$ $\rightarrow x=1, -3$

$= \frac{3}{2}, -\frac{5}{2}$ $\frac{3}{2}, -\frac{1}{2}$ $\frac{3}{2}, -\frac{1}{2}$

الف) $x^2 - 5x - 12 = 0$ ب) $2x^2 + 4x + 2 = 0$ ج) $x^2 + 6x + 5 = 0$ د) $x^2 + 4x - 5 = 0$

$\rightarrow (x-7)(x+2) = 0 \rightarrow x=7, -2$ $\rightarrow a+c=b, f+g=d$ $\Delta = b^2 - 4ac = 6^2 - 4 \cdot 1 \cdot 5 = 16$ $\rightarrow \Delta = b^2 - 4ac = 4^2 - 4 \cdot 1 \cdot (-5) = 36$

$\rightarrow x = -1, -\frac{5}{2}$ $= -16 \rightarrow \Delta < 0$ $= 36 - (4 \cdot 1 \cdot (-5)) = 36$

$\rightarrow x = -1, -\frac{5}{2}$ $\rightarrow x = -2, -1$ $\rightarrow x = -5, -1$

$\rightarrow x = -2, -1$ $\rightarrow x = -5, -1$

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

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

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

الف) $m^2 = m + 2 \rightarrow m^2 - m - 2 = 0$ ب) $m^2 = m + 2 \rightarrow m^2 - m - 2 = 0$

$\rightarrow (m-2)(m+1) = 0 \rightarrow m=2, -1$ $\rightarrow (m-2)(m+1) = 0 \rightarrow m=2, -1$

$\rightarrow m=2, -1$ $\rightarrow m=2, -1$

$\rightarrow m=2, -1$ $\rightarrow m=2, -1$

$a^2 = 2a - 2 \rightarrow a^2 - 2a + 2 = 0 \rightarrow (a-1)(a-1) = 0 \rightarrow a=1, 1$

$\rightarrow a=1$ $\rightarrow a=2$

$$x^5 - 1 = ax + b \xrightarrow{x=1} 0 = a + b, \quad x^5 = ax + b \xrightarrow{x=1} 1 = a + b$$

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$$\begin{aligned} &\rightarrow \left. \begin{aligned} 2a + b &= 1 \\ a + b &= 0 \end{aligned} \right\} \xrightarrow{x=1} \begin{aligned} 2a + b &= 1 \\ -a - b &= 0 \end{aligned} \\ &\quad \quad \quad a = 1, b = -1 \rightarrow a \times b = -1 \end{aligned}$$

$$2x - 5 = 5 - 2x \xrightarrow{x=K} 2K - 5 = 5 - 2K \rightarrow 4K = 10$$

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$$\rightarrow K = \frac{5}{2}$$

$$\text{الف)} \quad y^5 - 4y = x^5 - 4x + 2 \quad \text{ب)} \quad |x| + |y| = 2 \quad \text{ج)} \quad |y| = \sqrt{1 - \cos x} \quad \text{د)} \quad y^5 + x^5 + 2x + 1 = 0$$

$$\begin{aligned} &\rightarrow x^5 - 4x + 2 \rightarrow x_1 = 1, x_2 = 2 \rightarrow |y| = 2 - |x| \\ &\text{if} \rightarrow x = 2 \rightarrow y^5 - 4y = 0 \quad \text{if} \rightarrow x = 1 \rightarrow y^5 - 4y = 0 \\ &\rightarrow y^4(y - 4) = 0 \Rightarrow |y| = 2 \Rightarrow y = \pm 2 \\ &\quad \quad \quad y \leftarrow \begin{aligned} &+ \sqrt{6} \text{ تابع نیست} \\ &- \sqrt{6} \text{ تابع نیست} \end{aligned} \quad \quad \quad y \leftarrow \begin{aligned} &+ 1 \text{ تابع نیست} \\ &- 1 \text{ تابع نیست} \end{aligned} \end{aligned}$$

$$\text{الف)} \quad \sqrt{y} = x^2 \sqrt{x - 2} \quad \text{ب)} \quad y^5 + 2y = 5x \rightarrow y_1^5 + 2y_1 = 5x, \quad \text{ج)} \quad y_1^5 + 2y_1 = 5x_2 \rightarrow y_1^5 + 2y_1 = y_2^5 + 2y_2$$

$$\begin{aligned} &\rightarrow \sqrt{y_1} = -x_1^2 + x_1 - 2 \quad \text{if } x_1 = x_2 \rightarrow \sqrt{y_1} = \sqrt{y_2} \\ &\rightarrow \sqrt{y_2} = -x_2^2 + x_2 - 2 \Rightarrow y_1 = y_2 \text{ تابع هست} \\ &\rightarrow y_1^5 + 2y_1 = 5x_1 \rightarrow y_1^5 + 2y_1 = 5x_2 \rightarrow (y_1 - y_2)(y_1^4 + y_1^3 + y_1^2 + y_1 + 2) + 2(y_1 - y_2) = 0 \\ &\Rightarrow (y_1 - y_2)(y_1^4 + y_1^3 + y_1^2 + y_1 + 2) = 0 \Rightarrow y_1 - y_2 = 0 \Rightarrow y_1 = y_2 \text{ تابع هست} \end{aligned}$$

$$\text{الف)} \quad x \sin y = y \sin x \quad \text{if} \rightarrow x = 0 \quad \text{ب)} \quad \sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} = 2$$



تابع نیست

به ازای هر x همان مقدار y را باید قرار دهی
اما x و y نمی توانند صفر باشند

$$\Rightarrow x, y \in \mathbb{R} - \{0\}$$

تابع هست

