

الف) $9x^2 - 5x - 4 = 0 \rightarrow x^2 - 5x - 4 = 0 \rightarrow x^2 - 5x - 4 = 0 \rightarrow (x+4)(x-9) = 0$
 $x+4=0 \rightarrow x=-4$
 $x-9=0 \rightarrow x=9$

ب) $2x^2 - 11x - 6 = 0 \rightarrow x^2 - 11x - 6 = 0 \rightarrow (x-9)(x+1) = 0$
 $x-9=0 \rightarrow x=9$
 $x+1=0 \rightarrow x=-1$

ج) $4x^2 - 4x - 3 = 0 \rightarrow x^2 - 4x - 3 = 0 \rightarrow (x-4)(x+1) = 0$
 $x-4=0 \rightarrow x=4$
 $x+1=0 \rightarrow x=-1$

د) $2x^2 - 5x - 12 = 0 \rightarrow x^2 - 5x - 12 = 0 \rightarrow (x-8)(x+2) = 0$
 $x-8=0 \rightarrow x=8$
 $x+2=0 \rightarrow x=-2$

در آخر دقتی داشته باشید که در هر دو طرف تقسیم می‌کنیم

الف) $x^2 - 5x + 14 = 0 \rightarrow x^2 - 5x + 14 = 0 \rightarrow (x-7)(x+2) = 0$
 $x-7=0 \rightarrow x=7$
 $x+2=0 \rightarrow x=-2$

ب) $2x^2 + 5x + 2 = 0 \rightarrow \Delta = b^2 - 4ac = 25 - 16 = 9$
 $x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{-5 \pm 3}{4}$
 $x = \frac{-5+3}{4} = \frac{-2}{4} = -\frac{1}{2}$
 $x = \frac{-5-3}{4} = \frac{-8}{4} = -2$

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

د) $3x^2 + 2x - 2 = 0 \rightarrow \Delta = b^2 - 4ac = 4 + 24 = 28$
 $x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{-2 \pm \sqrt{28}}{6}$
 $x = \frac{-2 + \sqrt{28}}{6}$
 $x = \frac{-2 - \sqrt{28}}{6}$

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

الف) $(1^2, m^2) = (3, m+2) \rightarrow m^2 = m+2 \rightarrow m^2 - m - 2 = 0 \rightarrow (m-2)(m+1) = 0$
 $m-2=0 \rightarrow m=2$
 $m+1=0 \rightarrow m=-1$

ب) $(1^2, m^2) = (3, m+2) \rightarrow m^2 = m+2 \rightarrow m^2 - m - 2 = 0 \rightarrow (m-2)(m+1) = 0$
 $m-2=0 \rightarrow m=2$
 $m+1=0 \rightarrow m=-1$

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

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

$$x^2 - 1 = ax + b \rightarrow \text{زیرا هر دو معادله فقط برای } x=1 \text{ صدق می کنند} \rightarrow 1-1 = a+b \rightarrow a+b=0$$

$$ax + b = x^2 \rightarrow x=2 \text{ زیرا هر دو معادله فقط برای } x=2 \text{ صدق می کنند} \rightarrow 2a+b=1$$

$$\begin{cases} 2a+b=1 \\ a+b=0 \end{cases} \rightarrow \underline{a=1}$$

$$\begin{cases} 1+b=0 \\ b=-1 \end{cases}$$

$$a \times b = 1 \times -1 = -1$$

$$2x-3 = 4-2x \rightarrow \text{زیرا هر دو معادله فقط برای } k=5 \text{ صدق می کنند} \rightarrow 2k-3=4-2k \rightarrow \underline{k=5}$$

$$y^2 - 4y = x^2 - 4x + 3 \rightarrow y(y-4) = x^2 - 4x + 3 \rightarrow y(y-4) = 1-4+3$$

$$(ب) |x| + |y| = 2 \rightarrow |y| = -|x| + 2 \rightarrow |y| = -2+2 = 0 \rightarrow y=0$$

$$(ج) |y| = \sqrt{1-\cos x} \rightarrow |y| = \sqrt{1-(-1)} \rightarrow |y| = \sqrt{2} \rightarrow y^2 = 2 \rightarrow y = \pm \sqrt{2}$$

$$(د) y^2 + x^2 + 2x + 1 = 0 \rightarrow y^2 = -x^2 - 2x - 1 \rightarrow y^2 = -x^2 - 2x - 1 \rightarrow y^2 = -1$$

$$y^3 + x^2 = 2x - 2 \rightarrow y^3 = -x^2 + 2x - 2$$

$$(ب) y^3 + 2y = 2x \rightarrow \begin{cases} y_1^3 + 2y_1 = 2x_1 \\ y_2^3 + 2y_2 = 2x_2 \end{cases} \rightarrow y_1^3 + 2y_1 = y_2^3 + 2y_2 \rightarrow y_1^3 - y_2^3 + 2y_1 - 2y_2 = 0$$

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

$$II = y_1 = \frac{-y_2 \pm \sqrt{\Delta}}{2} \rightarrow \Delta = y_2^2 - 4(y_2^2 + 2) = y_2^2 - 4y_2^2 - 8 \rightarrow y_1 = \frac{-y_2 \pm \sqrt{-3y_2^2 - 8}}{2}$$

$$x \sin y = y \sin x \xrightarrow{x=1} \sin y = y \sin 1 \rightarrow \begin{cases} y=1 \\ y=0 \end{cases}$$

$$(ب) \sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} = 2 \xrightarrow{x=1} \frac{1}{\sqrt{y}} + \sqrt{y} = 2 \rightarrow \frac{\sqrt{y}}{y} + \frac{y}{1} = 2 \rightarrow \frac{\sqrt{y} + y^2}{y+1} = 2 \rightarrow \frac{\sqrt{y}(1+y)}{1+y} = 2$$

$$\sqrt{y} = 2 \rightarrow (\sqrt{y})^2 = 2^2 \rightarrow y = 4$$