

الف) $9x^2 - 5x - 4 = 0 \rightarrow x^2 - 5x - 4 = 0 \rightarrow (x-9)(x+4) \rightarrow x = 9, x = -4$
 ب) $3x^2 - 11x - 4 = 0 \rightarrow x^2 - 11x - 4 = 0 \rightarrow (x-9)(x+1) \rightarrow x = 9, x = -1$
 ج) $4x^2 - 4x - 3 = 0 \rightarrow x^2 - 4x - 12 = 0 \rightarrow (x-6)(x+2) \rightarrow x = 6, x = -2$
 د) $2x^2 - 8x - 12 = 0 \rightarrow x^2 - 8x - 12 = 0 \rightarrow (x-10)(x+2) \rightarrow x = 10, x = -2$

الف) $x^2 - 5x - 14 = 0 \rightarrow (x-7)(x+2) \rightarrow x = 7, x = -2$
 ب) $2x^2 + 5x + 2 = 0 \rightarrow x^2 + 5x + 4 = 0 \rightarrow (x+3)(x+2) \rightarrow x = -3, x = -2$
 ج) $x^2 + 2x + 3 = 0 \rightarrow 2^2 - 4(3)(1) = 4 - 12 = -8 < 0 \rightarrow \Delta < 0 \rightarrow$ ریشه ندارد
 د) $3x^2 + 2x - 5 = 0 \rightarrow 3^2 - 4(-5)(2) = 9 + 40 = 49 = 7^2 \rightarrow \Delta = 7^2 \rightarrow$

$$\begin{cases} \frac{-2+7}{6} = \frac{5}{6} \\ \frac{-2-7}{6} = -\frac{9}{6} = -\frac{3}{2} \end{cases}$$

$A \times B = B^T A$

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

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

الف) $m^2 = m + 2 \rightarrow m^2 - m - 2 = 0 \rightarrow (m-2)(m+1) \rightarrow m = 2, m = -1$
 ب) $m^2 = m + 2 \rightarrow m^2 - m - 2 = 0 \rightarrow (m-2)(m+1) \rightarrow m = 2, m = -1$
 ج) $m = 2 \rightarrow \{(2,4)(2,1)(-3,2)(-2,2)(2,4)(2,4)\}$ غ
 $m = -1 \rightarrow \{(2,1)(2,1)(-3,1)(-2,1)(2,1)(2,1)\}$ ✓
 د) $m = 2 \rightarrow \{(2,4)(2,1)(2,4)(2,4)(-2,2)(-2,2)\}$ ✓
 ه) $m = -1 \rightarrow \{(2,1)(2,1)(-3,1)(-2,1)(-2,1)(-2,1)\}$ ✓
 ز) $m = 2 \rightarrow \{(2,4)(2,1)(2,4)(2,4)(-2,2)(-2,2)\}$ ✓

$a^2 = 2a - 2 \rightarrow a^2 - 2a + 2 = 0 \rightarrow (a-2)(a-1) \rightarrow a = 2, a = 1$
 ا) $a = 1 \rightarrow \{(1,1)(1,1)(1,1)\}$ ع
 ب) $a = 2 \rightarrow \{(1,4)(1,4)(4,1)\}$ ✓

$$\Lambda = 2a + b \rightarrow \Lambda = \frac{2(-b) + b}{-b} \rightarrow b = \Lambda$$

$x = 2$ است

$$a + b = 1 - 1 \rightarrow a + b = 0 \rightarrow a = -b$$

$x = 1$ است

$$a = \Lambda$$

$$a \times b = -\Lambda \times \Lambda = -\Lambda^2$$

$$2k - 3 = 4 - 3k \rightarrow \Delta k = 7 \rightarrow k = \frac{7}{5}$$

الف) مثال نقض $x = 3$ $y^2 - 4y = x^2 - 4x + 3 \rightarrow y^2 - 4y = 0$

$$9 - 12 + 3 = 0 \quad y(y - 4) = 0$$

$$y = 0$$

$$y^2 = 4 \rightarrow y = \pm 2$$

ب) $|x| + |y| = 2$

$$y = +2, -2 \quad x = 0$$

ب) مثال نقض

ج) مثال نقض $|y| = \sqrt{1 - \cos x} \rightarrow 1 - \cos x \geq 0 \rightarrow \cos x \leq 1 \rightarrow y = -1, y = 1 \leftarrow \cos x = 0$

د) مقدار مثبت معرّف شده اند پس هر دو معرّف شده اند و مثلاً $(-1, 0)$ $y^2 + x^2 + 2x + 1 = 0 \rightarrow y^2 + (x+1)^2 = 0$ $(x+1)^2$ $y = 0$

الف) $\sqrt{y} + x^2 = 2x - 2 \rightarrow \sqrt{y} = (-x^2 + 2x - 2)^2 \rightarrow y = (-x^2 + 2x - 2)^4$

$x^2 + y^2 = \Delta x \rightarrow x_1^2 + y_1^2 = \Delta x \Rightarrow x_1^2 + y_1^2 = x_2^2 + y_2^2 \rightarrow x_1^2 + y_1^2 - x_2^2 - y_2^2 = 0$

$(x_1^2 - x_2^2) + (y_1^2 - y_2^2) \rightarrow (x_1 - x_2)(x_1 + x_2 + y_1 y_2) + 2(x_1 - x_2) = 0 \rightarrow$

$(x_1 - x_2)(x_1^2 + y_1^2 + x_1 y_2 + 1) = 0 \rightarrow x_1^2 + y_1^2 + x_1 y_2 + 1 = 0$ $\rightarrow$ معرّف شده

الف) $x \sin y = y \sin x \rightarrow x = 0 \rightarrow y = \pi, 2\pi, \dots$ مثال نقض

$x(\sqrt{\frac{x}{y}}) + \sqrt{\frac{y}{x}}(2) \rightarrow \frac{x}{y} + \frac{y}{x} + 2 = 4 \rightarrow \frac{x^2 + y^2}{xy} = 2 \rightarrow x^2 + y^2 = 2xy$ ب) معرّف شده

$x^2 + y^2 - 2xy = 0$
 $(x - y)^2 = 0$
 $x = y$