

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

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

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

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

$a^2 = 2a - 2 \rightarrow a^2 - 2a + 2 = 0 \rightarrow (a-2)(a-1) \rightarrow a = 2 \quad a = 1$
 ا) $a = 1 \rightarrow \{(1,1)(1,1)(1,1)\}$
 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

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

$a = \Lambda$

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

$$\text{الف) } y^2 - 4y = x^2 - 4x + 3 \rightarrow y^2 - 4y = 0$$

الف) مثال نقض $x = 1$

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

$$\text{ب) } |x| + |y| = 2$$

$$y = 0$$

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

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

ب) مثال نقض

$$\text{ج) } |y| = \sqrt{1 - \cos x} \rightarrow 1 - \cos x \geq 0 \rightarrow \cos x \leq 1 \rightarrow y = -1, y = 1 \quad \cos x = 0$$

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

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

$$\text{الف) } y^2 + 2y = \Delta x \rightarrow y_1^2 + 2y_1 = \Delta x \Rightarrow y_1^2 + 2y_1 = y_1^2 + 2y_2 \rightarrow y_1^2 + 2y_1 - y_1^2 - 2y_2 = 0$$

$$(y_1^2 - y_2^2) + (2y_1 - 2y_2) \rightarrow (y_1 - y_2)(y_1 + y_2 + 2) + 2(y_1 - y_2) = 0 \rightarrow (y_1 - y_2)(y_1 + y_2 + 3) = 0$$

$$\text{الف) } x \sin y = y \sin x \rightarrow x = 0 \rightarrow y = \pi, 2\pi, \dots$$

الف) مثال نقض

$$\text{ب) } \left(\sqrt{\frac{x}{y}}\right) + \sqrt{\frac{y}{x}} = 2 \rightarrow \frac{x}{y} + \frac{y}{x} + 2 = 4 \rightarrow \frac{x^2 + y^2}{xy} = 2 \rightarrow x^2 + y^2 = 2xy$$

الف) مثال نقض

$$x = y$$

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

(۱۰-ب) $\sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} = 2$

این عبارت تنها زمانی برقرار است که $1 = \sqrt{\frac{x}{y}}$ باشد پس

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

