

$x^2 - 5x - 14 = 0$ $(x+3)(x-8) = 0$ $x = -\frac{3}{1}$ $x = 8$	$x^2 - 18x - 9 = 0$ $(x+1)(x-9) = 0$ $x = -\frac{1}{1}$ $x = 9$	$4x^2 - 5x - 9 = 0 \rightarrow x^2 - 5x - \frac{9}{4} = 0$ $(x+\frac{5}{4})(x-\frac{9}{4}) = 0$ $x = -\frac{5}{4}$ $x = \frac{9}{4}$	۱
$\Delta = b^2 - 4ac$ $9 - 4(1)(3) = -1$ $\Delta < 0$ $\Delta = b^2 - 4ac = 9 - 4(3)(1) = -1$ $x = \frac{-3 \pm \sqrt{13}}{4}$	$x^2 + 5x + 4 = 0$ $(x+2)(x+3) = 0$ $x = -1$ $x = -\frac{3}{1}$	$x^2 - 5x + 14 = 0$ $(x-5)(x+2) = 0$ $x = 5$ $x = -2$	۲
$A \times B = \{ (1,2), (2,2), (3,2), (1,3), (2,3), (3,3) \}$ $B^T = \{ (2,2), (2,3), (3,2), (3,3) \}$ $A \times B - B^T = \{ (1,2), (1,3) \}$			۳
$m^2 = m + r$ $m^2 - m - r = 0$ $(m+1)(m-r) = 0$ $m^2 = m + r$ $m^2 - m - r = 0 \rightarrow (m+1)(m-r)$	$m = -1 \rightarrow \checkmark$ $m = 2 \rightarrow \alpha$ $m = 2 \checkmark$ $m = -1 \alpha$	$m = -1 \rightarrow \checkmark \rightarrow (3,1) \checkmark$ $m = 2 \rightarrow \alpha$	۴
$a^2 = 3a - 2$ $a^2 - 3a + 2 = 0 \rightarrow (a-1)(a-2) \rightarrow a = 1$ $a = 2$ $(1,1) \checkmark (1,1) \checkmark$ $(1,4) (1,4) \checkmark$			$a = 1 \rightarrow (1,4) \alpha$ $a = 2 \rightarrow (3,5) \checkmark$ $a = 2$

$$\left. \begin{array}{l} f(1) = 0 \\ f(1) = a+b \end{array} \right\} \begin{array}{l} a+b=0 \\ a=-b \end{array}$$

$$\left. \begin{array}{l} ra+b=1 \\ -rb+b=1 \\ -b=1 \rightarrow \underline{a=1} \\ \underline{b=-1} \end{array} \right\} a \times b = -1$$

$$rk-r = f-rk$$

$$rk + rk = f + rk$$

$$ak = v$$

$$\underline{k = \frac{v}{a}}$$

$$y'' - 4y = x^2 - 5x + 3 \quad (الف)$$

$$x=1 \rightarrow y'' - 4y = 1 - 5 + 3$$

$$y'' - 4y = 0$$

$$y(y'' - 4y) = 0$$

$$\downarrow \quad \boxed{y=0} \quad \boxed{y=2\sqrt{4}} \quad \text{تابع ثابت}$$

$$|x| + |y| = 3 \quad (ب)$$

$$|y| = 3 - |x|$$

$$x=2 \rightarrow |y| = 3 - 2 = 1$$

$$|y| = 1 \rightarrow \boxed{y = \pm 1} \quad \text{تابع ثابت}$$

$$x=4 \quad (ج)$$

$$|y| = \sqrt{1 - \frac{1}{4}}$$

$$|y| = \sqrt{\frac{3}{4}}$$

$$y = \pm \sqrt{\frac{3}{4}}$$

$$\text{تابع ثابت}$$

$$y^2 + 2x^2 + 2x + 1 = 0 \quad (د)$$

$$y^2 + (x+1)^2 = 0$$

$$y^2 = 0 \rightarrow y = 0$$

$$x+1 = 0 \rightarrow x = -1$$

$$(-1, 0) \quad \text{تابع ثابت}$$

$$y'' + 2y = 0 \quad (الف)$$

$$y_1'' + 2y_1 = 0 \quad \alpha_1 = \alpha_2$$

$$y_2'' + 2y_2 = 0 \quad \alpha_2 = \alpha_1$$

$$y_1'' + 2y_1 = 0 \quad \alpha_1 = \alpha_2$$

$$y_2'' + 2y_2 = 0 \quad \alpha_2 = \alpha_1$$

$$y_1'' + 2y_1 - y_2'' + 2y_2 = 0 \rightarrow$$

$$(y_1 - y_2)(y_1'' + y_1 y_2 + y_2'') + 2(y_1 - y_2) = 0$$

$$(y_1 - y_2)(y_1'' + y_1 y_2 + y_2'') + 2(y_1 - y_2) = 0 \rightarrow \boxed{y_1 = y_2} \quad \checkmark$$

$$\text{تابع ثابت}$$

$$\left. \begin{array}{l} \sqrt{y_1} + \alpha_1^2 = 2\alpha_1 - 2 \\ \sqrt{y_2} + \alpha_2^2 = 2\alpha_2 - 2 \end{array} \right\} \alpha_1 = \alpha_2 \quad (الف)$$

$$\sqrt{y_1} + \alpha_1^2 = 2\alpha_1 - 2$$

$$\sqrt{y_2} + \alpha_2^2 = 2\alpha_2 - 2$$

$$\sqrt{y_1} = \sqrt{y_2} \rightarrow y_1 = y_2$$

$$\sqrt{\frac{x}{y}} = a \rightarrow \frac{x}{y} = a^2$$

$$\frac{y}{x} = \frac{1}{a^2}$$

$$a + \frac{1}{a} = 2 \rightarrow a^2 + 1 = 2a \rightarrow a^2 - 2a + 1 = 0 \Rightarrow (a-1)^2 = 0$$

$$\sqrt{\frac{x}{y}} = 1 \rightarrow \frac{x}{y} = 1 \rightarrow x = y \quad \checkmark \quad \boxed{a=1}$$

$$\text{تابع ثابت} \quad (n \neq 0)$$

$$x \sin y = y \sin x \quad (الف)$$

$$x=0 \rightarrow \sin 0 = 0$$

$$0 = 0 \quad \checkmark$$

$$\text{تابع ثابت}$$

$$\left. \begin{array}{l} 1 = 1 \\ 2 = 2 \end{array} \right\} \checkmark$$

ج-۴) $(3, m^2)$ و $(3, m+2) \leadsto m^2 = m+2 \leadsto m^2 - m - 2 = 0$

$m=2 \rightarrow (2, 1)$ و $(2, 4) \times$

$m=-1 \rightarrow (-1, 4) (-1, 3) \times$ به ازای هیچ مقدار m عبارت تانژانت!

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

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

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

