

$x^2 - 5x - 14 = 0$ (د)
 $(x+3)(x-8) = 0$
 $x = -\frac{3}{1}$
 $x = 8$

$x^2 - 18x - 9 = 0$ (ب)
 $(x+1)(x-9) = 0$
 $x = -\frac{1}{1}$ $x = 9$

$x^2 - 5x - 12 = 0$ (ج)
 $(x+2)(x-6) = 0$
 $x = -\frac{2}{1}$ $x = 6$

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

$\Delta = b^2 - 4ac$ (ج)
 $\Delta = 4(1)(3) = -12$
 $\Delta < 0$ (حقیقی ندارد)

$x^2 + 5x + 4 = 0$ (ب)
 $(x+2)(x+3) = 0$
 $x = -\frac{2}{1}$ $x = -\frac{3}{1}$

$x^2 - 5x + 14 = 0$ (الف)
 $(x-5)(x+2) = 0$
 $x = \frac{5}{1}$ $x = -\frac{2}{1}$

$\Delta = b^2 - 4ac = 9 - 4(3)(1) = -3$
 $x = \frac{-3 \pm \sqrt{33}}{4}$

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

$m^T = m + r$
 $m^T - m - r = 0$
 $(m+1)(m-r) = 0$
 $m^T = m + r$
 $m^T - m - r = 0 \rightarrow (m+1)(m-r)$

$m = -1 \rightarrow \checkmark \rightarrow (3,1) \checkmark$
 $m = 2 \rightarrow \alpha$
 $m = 2 \checkmark$
 $m = -1 \alpha$

$a^T = 3a - r$
 $a^T - 3a + r = 0 \rightarrow (a-1)(a-r) \rightarrow a=1$
 $a=2$
 $(1,1) \checkmark$ $(1,1) \checkmark$
 $(1,4) (1,4) \checkmark$
 $a=1 \rightarrow (1,4) \alpha$
 $a=2 \rightarrow (3,5) \checkmark$

$a=2$

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

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

$$rk-r = f-rk$$

$$rk + rk = f + rk$$

$$ak = v$$

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

6

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

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

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

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

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

$$|x| + |y| = 3 \quad (ب)$$

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

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

$$|y| = 1 \rightarrow \boxed{y = \pm 1}$$

تابع ثابت

$$x=4 \quad (ج)$$

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

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

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

تابع ثابت

$$y^2 + 2x^2 + 2x + 1 = 0 \quad (د)$$

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

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

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

$$(-1, 0)$$

تابع ثابت

8

$$y'' + 2y = 0 \quad (الف)$$

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

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

$$y_1'' + 2y_1 = y_2'' + 2y_2$$

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

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

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

تابع ثابت

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

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

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

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

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

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

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

تابع ثابت

$$\boxed{a=1}$$

$$x \sin y = y \sin x \quad (الف)$$

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

$$0 = 0 \quad \checkmark$$

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$$0 = 0 \quad \checkmark$$

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