

۲. از بین حین عالی نوشتار!

①

$$(الف) x^2 - 5x - 4 = 0$$

$$\rightarrow x^2 - 5x - 4 = 0$$

$$(x-9)(x+5) = 0 \rightarrow x=9 \quad x=-5$$

$$\frac{5}{2} \rightarrow$$

$$x_1 = \frac{9}{4} \text{ و } -\frac{5}{4} \quad x_2 = \frac{5}{4} \text{ و } -\frac{9}{4}$$

(ب) $x^2 - 8x - 9 = 0$

$$x^2 - 8x - 9 = 0$$

$$(x-9)(x+1) = 0 \rightarrow x=9 \quad x=-1$$

$$\frac{5}{2} \rightarrow$$

$$x_1 = \frac{9}{4} \text{ و } -\frac{1}{4} \quad x_2 = \frac{1}{4} \text{ و } -\frac{9}{4}$$

(ج) $x^2 - 6x - 12 = 0$

$$x^2 - 6x - 12 = 0$$

$$(x-4)(x+3) = 0 \rightarrow x=4 \quad x=-3$$

$$\frac{5}{2} \rightarrow$$

$$x_1 = \frac{4}{4} \text{ و } -\frac{3}{4} \quad x_2 = \frac{3}{4} \text{ و } -\frac{4}{4}$$

(د) $x^2 - 5x - 12 = 0$

$$x^2 - 5x - 12 = 0$$

$$(x-8)(x+3) = 0 \rightarrow x=8 \quad x=-3$$

$$\frac{5}{2} \rightarrow$$

$$x_1 = \frac{8}{4} \text{ و } -\frac{3}{4} \quad x_2 = \frac{3}{4} \text{ و } -\frac{8}{4}$$

②

(الف) $x^2 - 5x - 12 = 0$ $\rightarrow (x-8)(x+3) = 0 \rightarrow x=8 \quad x=-3$

(ب) $x^2 + 5x + 6 = 0$ $\rightarrow (x+2)(x+3) = 0 \rightarrow x=-2 \quad x=-3$

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

(د) $x^2 + 3x - 4 = 0$

$$\Delta = b^2 - 4ac = 9 + 16 = 25$$

$$x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{-3 \pm 5}{2}$$

③

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix}$$

$$A \times B = \begin{bmatrix} (1 \times 2) & (1 \times 3) & (2 \times 2) & (2 \times 3) & (3 \times 2) & (3 \times 3) \end{bmatrix}$$

$$B \times B = \begin{bmatrix} (2 \times 2) & (2 \times 3) & (3 \times 2) & (3 \times 3) \end{bmatrix}$$

$$A \times B - B \times B = \begin{bmatrix} (1 \times 2) & (1 \times 3) \end{bmatrix}$$

④

(الف)

$$m^2 = m + 2 \rightarrow m^2 - m - 2 = 0 \rightarrow m = -1 \quad m = 2$$

$$m = -1$$

$$1 \rightarrow m = 2 \rightarrow \text{ناتوانی} \rightarrow (2 \times 2) (2 \times 1)$$

(ب)

$$m^2 = m + 2 \rightarrow m = -1 \rightarrow \text{ناتوانی} \rightarrow (-1 \times 2) (-1 \times 1)$$

$$1 \rightarrow m = 2 \rightarrow \text{ناتوانی} \rightarrow (2 \times 2) (2 \times 1)$$

ناتوانی در سرفه

⑤

$$a^2 - 3a + 2 = 0 \rightarrow a = 1 \rightarrow (1 \times 2) (1 \times 1)$$

$$1 \rightarrow a = 2 \rightarrow \text{ناتوانی}$$

⑥

$$f(x) = \begin{cases} x^2 - 1 & x \leq 1 \\ ax + b & 1 < x \leq 2 \\ x^2 & x > 2 \end{cases}$$

$$a = -b$$

$$b = -1$$

$$a + b = 0 \rightarrow 2a + b = 1 \rightarrow -b = 1 \rightarrow b = -1$$

$$1 \rightarrow a = 1$$

$$x = 2 \rightarrow y = 1$$

$$a \times b = -1$$

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$$f(x) = \begin{cases} px - p \\ e - px \end{cases}$$

$$\rightarrow px - p = e - px$$

$$\omega K = V - \omega K = \frac{V}{\omega}$$

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$$a) y'' - 4y = x^2 - 4x + 1$$

$$x=1$$

$$y'' - 4y = 0 \rightarrow y = \pm \sqrt{x}$$

Complex

c

$$b) |x| + |y| = 1$$

$$x=1$$

$$|x|=1$$

$$\rightarrow |y|=1$$

$$\rightarrow y=1$$

$$\rightarrow y=-1$$

Complex

$$2) |y| = \sqrt{1 - \cos x}$$

Complex

$$x = -\pi \rightarrow |y| = \sqrt{2} \rightarrow y = \pm \sqrt{2}$$

Complex

$$3) y'' + x^2 + 2x + 1 = 0$$

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

$$\rightarrow y = 0$$

$$\rightarrow x = -1$$

(-1,0)

Complex

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$$a) \sqrt{y} + x^2 = px - p$$

$$\sqrt{y} = px - p - x^2$$

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

Complex

$$b) y'' + py = \omega x$$

$$y_1'' + py_1' = \omega x_1$$

$$y_2'' + py_2' = \omega x_2$$

$$\rightarrow y_1 = y_2$$

$$\rightarrow y_1'' + py_1' = y_2'' + py_2'$$

$$y_1'' - y_2'' = p(y_1 - y_2)$$

$$\rightarrow (y_1 - y_2)(y_1'' + y_2'' + y_1 y_2) = -p(y_1 - y_2)$$

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

$$\rightarrow y_1'' + y_2'' + y_1 y_2 + p = 0 \rightarrow y_2'' - 5(y_2'' + p)$$

$$y_2'' - 5y_2'' - p = 0 \rightarrow -4y_2'' - p = 0$$

$$-4y_2'' - p = 0 \rightarrow -(4y_2'' + p) = 0$$

Complex, $y_1 = y_2$

12

$$a) x \sin y = y \sin x \rightarrow$$

$$x = -\pi$$

$$-\pi \times \sin y = y \times 0$$

$$\rightarrow \sin y = 0$$

$$\rightarrow y = -\pi, \pi$$

$$b) \sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} = 1$$

Complex

$$a + \frac{1}{a} = [1, \infty) \rightarrow a > 1$$

$$\sqrt{\frac{x}{y}} \leq 1 \rightarrow x = y \rightarrow \text{Complex}$$