

تعیین ضرایب

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$$y = -x^2 + bx + c$$

$$y_{\max} = \frac{-\Delta}{4a} = V$$

①

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$$\frac{-(b^2 - 4(-1)(c))}{-4} = \frac{b^2 + 4c}{4} = V \rightarrow b^2 = 14$$

$$\boxed{b = \pm \sqrt{14}}$$

$$\text{الف) } f(x) = x^2 + 2x + c \rightarrow x^2 = t \rightarrow t^2 + 2t + c = 0$$

②

$$\Delta = c - 1 = -1 \cdot x \cdot \dots$$

$$\text{ب) } f(x) = (c - x^2)^2 - 2(c - x^2) - 1 = 0 \rightarrow c - x^2 = t$$

$$t^2 - 2t - 1 = 0 \rightarrow (t - 2)(t + 1) = 0 \rightarrow t = 2 \rightarrow c - x^2 = -2$$

$$\boxed{x = \pm \sqrt{V}}$$

$$\leftarrow V = x^2$$

$$\rightarrow t = 2 \rightarrow c - x^2 = 2$$

$$x^2 = -1 \cdot x$$

$$x^2 - 14x + m = 0$$

③ α, β roots of the equation

$$\beta = \alpha + 2$$

$$\alpha + \beta = \frac{14}{1} = 14 \rightarrow \alpha + \alpha + 2 = 14$$

$$\alpha = 1$$

$$\beta = 1 + 2 = 3$$

$$\alpha\beta = \frac{m}{1} = 1 \times 3 = 3 \rightarrow m = 12$$

$$x^2 - 14x + 12 = 0$$

$$\Delta > 0 \checkmark$$

$$x^2 - 4x + m - 1 = 0$$

④

$$2\alpha - \beta = 2 \rightarrow \beta = 2\alpha - 2$$

$$\alpha + \beta = \frac{-(-4)}{1} = 4 \rightarrow \alpha + 2\alpha - 2 = 4 \rightarrow \alpha = 2$$

$$\beta = 2 \times 2 - 2 = 2$$

$$\alpha\beta = \frac{m-1}{1} = 2 \times 2 = 4 \rightarrow m-1 = 4 \rightarrow m = 5$$

$$x^2 - 4x + 4 = 0$$

$$\Delta = 0 \checkmark$$

$$-mx^2 + 4x + m^2 - 2 = 0$$

⑤

$$\alpha = \frac{1}{\beta} \rightarrow \alpha\beta = 1 = \frac{m^2 - 2}{-m} \rightarrow m^2 - 2 = -m$$

$$m^2 + m - 2 = 0 \rightarrow (m+2)(m-1) = 0$$

$$m = -2 \rightarrow x^2 + 4x + 2 = 0 \rightarrow \Delta = 16 - 8 = 8 > 0$$

$$m = 1 \times$$

$$\boxed{m = 1}$$

$\therefore$ $\rightarrow$ $\Delta > 0$ $\checkmark$

$$\boxed{m = 1} \rightarrow x^2 + 4x - 1 = 0 \rightarrow \Delta = 16 + 4 = 20 > 0$$

$$x = \frac{-4 \pm \sqrt{20}}{2} \rightarrow x = \frac{-4 \pm 2\sqrt{5}}{2}$$

$$\rightarrow x = -2 \pm \sqrt{5}$$

$$x^2 - mx + 1 = 0$$

⑥

$$\alpha\beta = 1 \rightarrow \alpha\beta(\beta) = 1 \rightarrow \beta = \frac{1}{\alpha} \rightarrow \alpha(\frac{1}{\alpha}) = 1 \rightarrow \alpha = \frac{1}{\alpha} \rightarrow \alpha^2 = 1$$

$$\left. \begin{array}{l} \alpha = \frac{q}{r} \\ \beta = \frac{r}{q} \end{array} \right\} \rightarrow \alpha + \beta = m = \frac{q}{\Sigma} + \frac{\Sigma}{r} = \frac{rV+14}{1r} = \frac{\Sigma r}{1r}$$

$$2x^r - \frac{r^2 r}{1r} + r = 0 \checkmark$$

$$2x^r - rx + m = 0$$

$$\alpha = r\beta \rightarrow \alpha + \beta = r \rightarrow r\beta = \Sigma \rightarrow \beta = 1 \leftarrow \alpha = r$$

$$\boxed{\alpha\beta = m = r}$$

$$2x^r - rx + r = 0 \checkmark$$

$$2x^r - vx + r = 0 \xrightarrow{u=x} 2x^r - vx + r = 0 \rightarrow 2x^r + r = vx$$

$$\alpha + \frac{r}{\alpha} = v$$

$$\left(\alpha + \frac{r}{\alpha}\right)^r = \alpha^r + \frac{1}{\alpha^r} + r\alpha\left(\frac{r}{\alpha}\right)\left(\alpha + \frac{r}{\alpha}\right) = v \times v \times v = r^2 \Sigma r$$

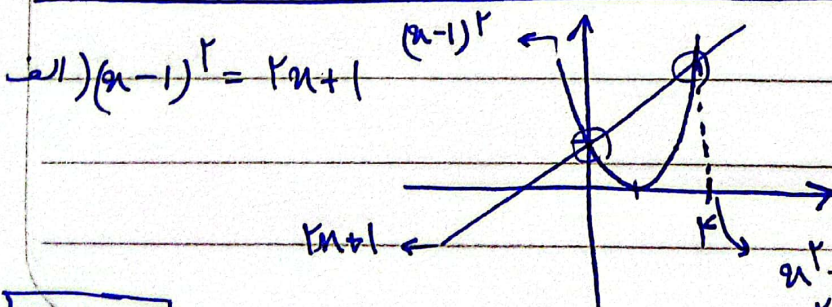
$$\alpha^r + \frac{1}{\alpha^r} = r^2 \Sigma r = r^2 = \boxed{r^2}$$

$$h(t) = -10t^r + \omega \cdot t \rightarrow y_{max} \Rightarrow x_0 = \frac{-\omega}{-r} = \frac{\omega}{r}$$

$$-10\left(\frac{\omega}{r}\right)^r + \omega\left(\frac{\omega}{r}\right) = 128 - 42\omega =$$

$$\boxed{42, \omega}$$

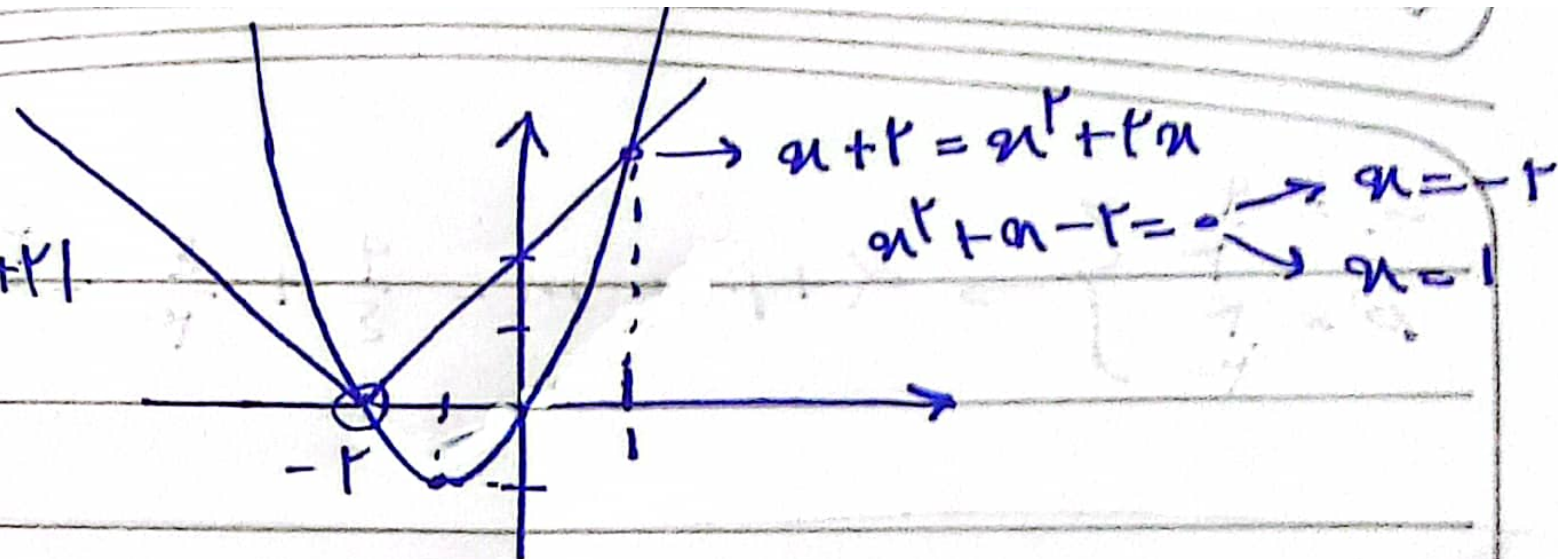
$$y = -10x^r + \omega \cdot x = -10(x)(x - \omega) \rightarrow x = \boxed{\omega = t}$$



$$\boxed{x = 0, r}$$

$$\begin{array}{l} 2x^r - r(n+1) = r(n+1) \\ 2x^r - rx = 0 \rightarrow x = 0 \\ \quad \quad \quad \rightarrow x = r \end{array}$$

$$b) x^r + rx = |x+r|$$



$$x = -r, 1$$