

گروه یازدهم (مترجم)

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$$g = (a-1)x^2 + x + 3 = 0 \quad x = \frac{-b}{2a} = 2 \quad \frac{-1}{2a-2} = 2$$

(1)

چون $x=2$ ریشه است

$$g = -\frac{1}{\varepsilon} x^2 + x + 3 = 0 \rightarrow \omega \rightarrow \frac{-1 \pm \sqrt{1 + 4\varepsilon x^2}}{2\varepsilon x^2}$$

$$2x - \frac{1}{\varepsilon} \leftarrow (4) \leftarrow (4) \leftarrow (4)$$

$$P(a) = mx^2 - 2x + m \quad (1) \quad m < 0$$

$\Delta > 0$

$$4 - 4xm + m^2 > 0$$

(2)

$$f(a) = \begin{matrix} x_1 & x_2 & x_3 \\ \hline 1 & 4 & 9 \end{matrix} \rightarrow \text{Graph} \rightarrow A$$

$$4 - 4xm^2 > 0 \quad (3)$$

$$\varepsilon m^2 < 4 \rightarrow m < \frac{2}{\sqrt{\varepsilon}}$$

$$(1) \cap (2) \cap (3) \rightarrow -\frac{2}{\sqrt{\varepsilon}} < m < \frac{2}{\sqrt{\varepsilon}}$$

$$(4) \quad m > \frac{2}{\sqrt{\varepsilon}}$$

$$x = \frac{\sqrt{5}}{2}, \quad \frac{x + \sqrt{5}}{x}$$

$$S = \frac{x - \sqrt{5} + x + \sqrt{5}}{x} = 2$$

(5)

$$P = \frac{(x - \sqrt{5})(x + \sqrt{5})}{4} = \frac{\varepsilon}{9}$$

$$g = x^2 - 2x + \frac{\varepsilon}{9} \rightarrow$$

$$9g = 9x^2 - 18x + \varepsilon$$

$$g = 2x^2 - 18x + m + 1 \quad \alpha < \beta$$

$$4x^2 + \beta^2 \geq 4 \quad m \geq P$$

$$S = \frac{\Delta}{4} = 1 \rightarrow \alpha + \beta = 4 \quad \beta = 4 - \alpha$$

$$4x^2 + (4 - \alpha)^2 \geq 4$$

$$(\alpha + 1) \leq (\alpha - 1)^2 \geq 1$$

$$\leftarrow \{ \alpha^2 - 18\alpha + 1 \geq 0 \}$$

$$\text{if } \alpha = 1 \rightarrow \beta = 4 - 1 = 3$$

$$4x^2 - 18x + m + 1 \quad P = \frac{\varepsilon}{9} = \alpha \cdot \beta$$

$$4 - 18 = \varepsilon \leftarrow \varepsilon = 4 - 18 \leftarrow 14 \leftarrow \frac{14 \cdot 9}{1}$$

$$S \begin{cases} x_5 = x \\ y_5 = 4 \end{cases} \quad y = ax^2 + bx + c$$

$$x_5 = \frac{-b}{2a} \rightarrow b = -2ax \quad c = 0$$

$$ax^2 - 2ax + 0 = 4 \quad \xrightarrow{14} \quad -2a = 4 \rightarrow a = -2$$

$$y = -x^2 + 4x \rightarrow \Delta = 16$$

$$\frac{-1 \pm 0}{-2} \quad (S) \quad (-1, 0) \text{ and } (1, 0)$$

$$ax^2 - vx + 9\beta \quad \beta > 0 \quad \frac{1}{a} + \frac{1}{\beta} = 0$$

$$\text{if } x = \alpha \rightarrow \alpha^2 - v\alpha + 9\beta = 0$$

$$\text{if } x = \beta \rightarrow \alpha\beta^2 - v\beta + 9\beta = 0 \rightarrow \alpha\beta^2 + 9\beta = v\beta \rightarrow \beta(\alpha\beta + 9) = v\beta \rightarrow \alpha\beta + 9 = v$$

$$p = \frac{c}{a} = \frac{9\beta}{a} = x \rightarrow 9\beta = vx \rightarrow \alpha^2 - vx + 9\beta = 0$$

$$9\beta = vx \rightarrow \alpha < 0 \quad \alpha(\alpha^2 - 9) = \alpha^2 - 9\alpha = 0$$

$$\alpha = -v \quad \alpha\beta = -9 \rightarrow \beta = \frac{9}{v}$$

$$\frac{1}{a} + \frac{1}{\beta} = \frac{\alpha + \beta}{\alpha\beta} = \frac{\frac{v}{9} - v}{-v} = \frac{v}{9}$$

$$x^2 + mx - 14 \quad x^2 - m\beta = 14$$

$$\begin{cases} \alpha^2 + m\alpha - 14 \\ \beta^2 + m\beta - 14 \end{cases} \rightarrow \alpha^2 - \beta^2 + m(\alpha - \beta) = 0$$

$$\alpha^2 - \beta^2 = (\alpha - \beta)(\alpha + \beta) = -m(\alpha - \beta)$$

$$\alpha + \beta = -m$$

$$\text{if } m = -14 \rightarrow \alpha^2 - 14\alpha + 14 = 0 \quad \Delta < 0$$

$$\text{if } m = 14 \rightarrow \alpha^2 + 14\alpha - 14 = 0 \quad \Delta > 0$$

$$f(m) = m\alpha^2 + p\alpha + \frac{m}{p} + v$$

$$y_5 = 14$$

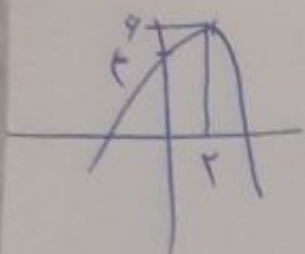
$$x_5 = \frac{-p}{2m} = \frac{-1}{2m} \rightarrow y_5 = m \cdot \frac{1}{m} = 1$$

$$1 - 14 + \alpha^2 + 14\alpha = 14m \rightarrow m^2 - 14m + 14 = 0$$

$$\Delta = 196 - 56 = 140$$

$$m = \frac{14 \pm \sqrt{140}}{2} = 7 \pm \sqrt{35}$$

$$m < 0 \rightarrow m = 7 - \sqrt{35}$$



$$m_5 = 2$$

$$y_5 = 4$$

$$C = 2$$

$$\frac{-b}{2a} = 2$$

$$b = -4a$$

(9)

$$y = am^2 + bma + c$$

$$y = am^2 - 4am + c$$

$$4a - 4a + c = 4$$

$$\frac{4}{4}$$

$$-4a = 4 \rightarrow a = -1$$

$$y = \frac{1}{4}m^2 + 2m + c$$

$$\rightarrow \frac{1}{a} + \frac{1}{b} \rightarrow \frac{a+b}{ab} = \frac{-1}{2}$$

$$m^2 - (4a + c)m + (4a^2 + 4a + c) = 0$$

(10)

$$\text{if } m = 2 \rightarrow 4 - 2(4a + c) + 4a^2 + 4a + c = 0 \rightarrow 4 - 8a - 2 + 4a^2 + 4a + c = 0$$

$$\text{if } a = 1 \rightarrow m^2 - 4m + 4 \rightarrow m = 2 \quad \checkmark \quad a = 1 \rightarrow 4a^2 - 4a - 1 = 0$$

$$\text{if } a = -\frac{1}{4} \rightarrow m^2 - \frac{1}{2}m + \frac{1}{4} = 0 \quad \checkmark \quad \frac{1}{4} = \frac{1}{4} - \frac{1}{4} = \frac{1}{4}$$

$$m = \frac{\frac{1}{2} \pm \frac{1}{2}}{2} = 2 \quad \checkmark \quad \left(\frac{1}{2}\right) \checkmark$$