

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

$$y = \frac{1}{4}x^2 + x + 2 \xrightarrow{x(-4)} x^2 - 4x - 8 = 0 \Rightarrow (x-6)(x+2) = 0 \Rightarrow x_1 = -2, x_2 = 6$$

$$f(m) = mn^2 - 2n + m \rightarrow \Delta > 0 \Rightarrow 4 - 4nm + m = 4 - 4m^2 > 0 \Rightarrow m^2 < 1 \Rightarrow -1 < m < 1$$

$$\frac{n}{2} \mid \frac{n}{2} \mid \frac{n}{2} \rightarrow a < 0 \rightarrow m < 0$$

$$I \cap II \Rightarrow \boxed{-\frac{1}{2} < m < 0}$$

$$y = ax^2 - 5x + 2 \rightarrow 5 = x_1 + x_2 \Rightarrow \frac{5-\sqrt{\Delta}}{2} + \frac{5+\sqrt{\Delta}}{2} = \frac{5}{a} \Rightarrow \frac{5}{a} = 5 \Rightarrow a = 1$$

$$p = x_1 \cdot x_2 = \left(\frac{5-\sqrt{\Delta}}{2}\right) \left(\frac{5+\sqrt{\Delta}}{2}\right) = \frac{25-\Delta}{4} = \frac{25-25}{4} = 0$$

$$\Rightarrow x^2 - 5x + \frac{2}{a} = y$$

$$\alpha + \beta = 4 \mid \alpha^2 + \beta^2 = 12 \Rightarrow \alpha^2 + \beta^2 + 2\alpha\beta = 16 \Rightarrow (\alpha + \beta)^2 + 2\alpha\beta = 16 \Rightarrow 16 + 2\alpha\beta = 16 \Rightarrow \alpha\beta = 0$$

$$\Rightarrow (16 - 2(\frac{m}{2})) + 2\alpha^2 = 16 \Rightarrow 16 - m - 2 + 2\alpha^2 = 16 \Rightarrow 2\alpha^2 = m$$

$$\alpha < \beta \Rightarrow \alpha = \frac{-b - \sqrt{\Delta}}{2a} = \frac{1 - \sqrt{16 - 4(1)(m)}}{2} = \frac{1 - \sqrt{16 - 4m}}{2}$$

$$\frac{1 - \sqrt{16 - 4m}}{2} \Rightarrow \alpha^2 = \frac{(1 - \sqrt{16 - 4m})^2}{4} = \frac{1 - 2\sqrt{16 - 4m} + 16 - 4m}{4} = \frac{17 - 4m - 2\sqrt{16 - 4m}}{4}$$

$$\left. \begin{array}{l} \text{طول رأسی} \\ \text{عرض} \end{array} \right\} \alpha(n - x_0)^2 + y_0 \Rightarrow \alpha(n-1)^2 + 9 = \alpha(n^2 - 4n + 4) + 9$$

$$\Rightarrow \alpha n^2 - 4\alpha n + 4\alpha + 9 = \alpha n^2 - 4\alpha n + 4\alpha + 9 \Rightarrow -4\alpha n + 4\alpha + 9 = -4\alpha n + 4\alpha + 9 \Rightarrow -4\alpha n + 4\alpha + 9 = -4\alpha n + 4\alpha + 9$$

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$$\alpha + \beta = \frac{V}{2} \quad \alpha \cdot \beta = \frac{9}{4} \rightarrow \alpha^2 = 9 \rightarrow \alpha = \pm 3 \rightarrow -3 \checkmark$$

$$-\langle \alpha \beta = -\frac{V}{2} \rightarrow -9 \alpha \beta = V$$

$$\frac{1}{\alpha} + \frac{1}{\beta} = \frac{1}{3} + \frac{1}{-3} = \frac{-1+9}{-3} = \frac{V}{4}$$

$$\boxed{\beta = \frac{3}{\alpha}}$$

$$\alpha + \beta = -m \quad \alpha \cdot \beta = -\frac{1}{m}$$

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

$$= m^2 + \frac{1}{m} - 1 = 0$$

$$(m+1)(m-1) = 0$$

$$m = 1 \rightarrow \alpha + \beta = -1$$

$$\frac{\Delta}{4a} = 1 \rightarrow \frac{-(14 - 5m(\frac{m}{2} + 1))}{5m} = 1$$

$$\frac{m^2}{2} + 14m + 5m - 1 = 0 \rightarrow m^2 - 19m - 1 = 0$$

$$(m-1)(m+1) = 0$$

$$m = 1 \rightarrow \alpha + \beta = -1$$

$$\frac{1}{\alpha} + \frac{1}{\beta} = ? \quad \left. \begin{matrix} x_0 = 1 \\ y_0 = 1 \end{matrix} \right\} \alpha(x-1)^2 + \beta(x-1) + 1 = 0$$

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

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

$$\frac{1}{\alpha} + \frac{1}{\beta} = \frac{\beta + \alpha}{\alpha\beta} = \frac{1}{-1} = -1$$

$$x = 1 \rightarrow \epsilon_-(\epsilon_+ \epsilon_-) + (\epsilon_+ \epsilon_- + \epsilon_+ \epsilon_-) = 0 \rightarrow \epsilon_- \epsilon_+ = 1$$

$$\epsilon_+ \epsilon_- = 1 \rightarrow \epsilon_+ = \frac{1}{\epsilon_-}$$

$$\epsilon_+ = -\frac{1}{2} \rightarrow \epsilon_- = -2$$

$$S = \alpha + \beta = \frac{-b}{a} = \frac{1}{2}$$

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