

$$\frac{-b}{2a} = 2 \rightarrow \frac{-1}{2a-2} = 2 \Rightarrow 2a-2 = -1 \Rightarrow 2a = 3 \Rightarrow a = \frac{3}{2}$$

$$-\frac{1}{2}x^2 + x + 2 = 0 \rightarrow x = \frac{-1 \pm \sqrt{1}}{-1} \Rightarrow \boxed{x = -2} \quad \Rightarrow \quad \text{طول مساحت} = 4$$

حالت اول: $\Delta > 0 \rightarrow 2a-2 > 0 \rightarrow 2a > 2 \Rightarrow a > 1$ و $m < 0$ و $m > 0$ ۵

$$-\frac{a}{2} < m < \frac{a}{2} \xrightarrow{m=0} -\frac{a}{2} < 0 < \frac{a}{2} \Rightarrow \boxed{(-\frac{a}{2}, 0)}$$

$$S = \frac{4-\sqrt{5}}{4} + \frac{4+\sqrt{5}}{4} = \frac{8}{4} = 2$$

$$P = \left(\frac{4-\sqrt{5}}{4}\right)\left(\frac{4+\sqrt{5}}{4}\right) = \frac{16-5}{16} = \frac{11}{16}$$

$$x^2 - 5x + P = 0 \rightarrow x^2 - 5x + \frac{11}{16} = 0 \xrightarrow{\times 16} \boxed{16x^2 - 80x + 11 = 0}$$

$$\alpha + \beta = 5 \quad \alpha \cdot \beta = \frac{m+2}{2} \quad 2\alpha^2 + \beta^2 = 12 \rightarrow 2\alpha^2 + \alpha^2 + \beta^2 = 12 \Rightarrow 3\alpha^2 + \beta^2 = 12$$

$$12 - 2\left(\frac{m+2}{2}\right) + 12 - m - 2 = 12 \rightarrow 12 - m - 2 = 12 \rightarrow 10 - m = 12 \Rightarrow m = -2$$

$$2\alpha^2 - 12\alpha + 5\alpha + 2 = 0 \rightarrow 2\alpha^2 - 7\alpha + 2 = 0 \rightarrow \alpha^2 - 3.5\alpha + 1 = 0 \Rightarrow (\alpha-1)^2 = 0 \Rightarrow \alpha = 1$$

$$m = 5 \times 1 = 5$$

$$S(2,9) \rightarrow ax^2 + bx + c = y \Rightarrow 4a + 2b + c = 9 \rightarrow 4a + 2b = 9 \rightarrow 2a + b = \frac{9}{2}$$

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

$$\Rightarrow -2a = \frac{9}{2} \Rightarrow a = -\frac{9}{4}, b = \frac{9}{2}$$

$$y = ax^2 + bx + c \rightarrow y = -\frac{9}{4}x^2 + \frac{9}{2}x + c \rightarrow x^2 - 2x - \frac{4}{9} = 0$$

$$\Rightarrow \boxed{(-1, 5)}$$

$$\alpha\beta = \frac{9\beta}{\alpha} \rightarrow \alpha = \pm 3$$

$$\alpha + \beta = \frac{4}{\alpha} \begin{cases} \alpha = 3 \Rightarrow \beta = -\frac{1}{3} & \text{OÖE} \\ \alpha = -3 \Rightarrow \beta = \frac{1}{3} & \text{OÖ} \end{cases}$$

$$\frac{1}{\alpha} + \frac{1}{\beta} = -\frac{1}{3} + \frac{1}{3} = -\frac{3+9}{9} = -\frac{12}{9} = -\frac{4}{3}$$

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$$\begin{aligned} \alpha^r + \beta^r - \gamma m &= \lambda \rightarrow (-m)^r - 2(-\gamma m) - \gamma m = \lambda \rightarrow m^r + 2\gamma m - \gamma m = m^r + \gamma m - \lambda = 0 \Rightarrow (m+2)(m-\gamma) = 0 \\ m &= -2 \rightarrow \Delta r, \text{ OÖE} \\ m &= \gamma - \Delta \gamma, \text{ OÖ} \end{aligned}$$

$$(x^r + m\alpha - \gamma m = 0 \rightarrow \beta^r + \beta m - \gamma m = 0 \rightarrow -m\beta = \beta^r - \gamma m)$$

$$\Rightarrow x^r + \gamma x - \gamma = 0$$

$$s = \frac{-b}{a} = \frac{-\gamma}{1} = -\gamma$$

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$$\Delta = 14 - \varepsilon(m)\left(\frac{m}{\gamma} + \gamma\right) = 14 - \gamma m^r - \gamma \lambda m$$

$$y_s = \lambda \rightarrow \frac{-\Delta}{\varepsilon a} = \frac{\gamma m^r + \gamma \lambda m - 14}{\varepsilon m} = \frac{m^r + \gamma m - \lambda}{\gamma m} = \lambda \rightarrow 14m = m^r + \gamma m - \lambda \Rightarrow m^r - \gamma m - \lambda = 0$$

$$\begin{aligned} (m-2)(m+\gamma) &= 0 & m &= 2 & \text{OÖE (max)} & \Rightarrow f(x) = -\gamma x^r + \varepsilon x + \gamma \rightarrow x^r - \gamma x - \gamma = 0 \\ & & m &= -\gamma & \alpha_0 & \\ & & & & & \Rightarrow (x-2)(x+1) = 0 \\ & & & & & x = 2 \rightarrow \text{max} \end{aligned}$$

$$K = 10$$

$$y = ax^r + bx + c$$

$$\frac{-b}{\gamma a} = \gamma \Rightarrow -\varepsilon a = b$$

$$c = \varepsilon \quad \frac{-b}{\gamma a} = \gamma \quad \frac{-\Delta}{\varepsilon a} = 4$$

$$ax^r + bx + c = y \xrightarrow{x=2} \varepsilon a + \gamma b + \varepsilon = 4 \Rightarrow \gamma a + \gamma b = \gamma \Rightarrow$$

$$\rightarrow -\gamma a = 1 \rightarrow a = -\frac{1}{\gamma} \quad b = -\frac{1}{\gamma}(-\varepsilon) = \varepsilon \quad \rightarrow y = -\frac{1}{\gamma}x^r + \varepsilon x + \varepsilon$$

$$\gamma a + \gamma b = 1 \Rightarrow -\varepsilon a$$

$$\frac{1}{\alpha} + \frac{1}{\beta} = \frac{\alpha + \beta}{\alpha\beta} = \frac{\varepsilon}{-\lambda} = -\frac{1}{\gamma}$$

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$$x = \gamma \rightarrow \varepsilon - \lambda a - \lambda + \gamma a^r + 4a + \gamma = 0 \rightarrow \gamma a^r - \gamma a - 1 = 0 \quad a = 1, a = -\frac{1}{\gamma}$$

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$$\begin{cases} a = 1 \rightarrow x^r - \lambda x + 1 = 0 \Rightarrow (x-2)(x-4) \rightarrow x = 2, x = 4 \\ a = -\frac{1}{\gamma} \rightarrow x^r - \frac{\lambda}{\gamma} x + \frac{\varepsilon}{\gamma} = 0 \Rightarrow (x-2)(x-\frac{\gamma}{\varepsilon}) \rightarrow x = 2, x = \frac{\gamma}{\varepsilon} \end{cases}$$

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