

$$\begin{aligned}
 & x^2 - 9x + 14 = 0 \quad x_1 + x_2 = 9 \quad \text{و} \quad x_1 x_2 = 14 \\
 & x_1 = 3x_2 \\
 & 3x_2 + x_2 = 9 \Rightarrow 4x_2 = 9 \Rightarrow x_2 = \frac{9}{4} \\
 & x_1 = \frac{27}{4} \\
 & \Delta = 81 - 56 = 25 \Rightarrow \sqrt{\Delta} = 5 \\
 & x = \frac{9 \pm 5}{2} \Rightarrow x = 7 \text{ یا } 2
 \end{aligned}$$

$$\begin{aligned}
 & 3x^2 - (m+1)x + 1 = 0 \quad \Delta = 0 \quad mx^2 + 3x + 2 = 0 \\
 & \left(\sqrt{\frac{1}{x_2}} + \sqrt{\frac{1}{x_1}} = \omega \right) \Rightarrow \left(\sqrt{\frac{1}{x_1 x_2}} \right)^2 + \frac{1}{x_2} + \frac{1}{x_1} = \omega^2 \\
 & \frac{m+1}{3} = x_2 + x_1 \Rightarrow \frac{1}{3} = x_1 x_2 \\
 & 1 + m = \frac{1}{x_2} + \frac{1}{x_1} \Rightarrow \sqrt{\frac{1}{x_1 x_2}} = \sqrt{3} = \omega \\
 & (1 + m) + (1 + m) = \omega^2 \\
 & 2 + 2m = 3 \Rightarrow m = \frac{1}{2} \\
 & -x^2 + 3x + 2 = 0 \Rightarrow x = 4 \text{ یا } -1 \\
 & \Delta = 9 - 8 = 1 \Rightarrow \sqrt{\Delta} = 1 \\
 & x = \frac{3 \pm 1}{2} \Rightarrow x = 2 \text{ یا } 1
 \end{aligned}$$

$$\begin{aligned}
 & 6x^3 + kx^2 - 9x - 2 = 0 \quad \alpha\beta = -2 \quad k = 5 \quad \boxed{-3} \\
 & \alpha + \beta = 1 \\
 & x^2 - (\alpha + \beta)x + \alpha\beta = 0 \\
 & x^2 - x - 2 = 0 \Rightarrow x = 2 \text{ یا } -1 \\
 & (x-2)(x+1) = 0 \Rightarrow x = 2 \text{ یا } -1 \\
 & \alpha + \beta + \gamma = -\frac{k}{6} \Rightarrow 1 - \frac{1}{2} = -\frac{k}{6} \Rightarrow k = 3
 \end{aligned}$$

$$\begin{aligned}
 & x^2 + 4x + a = 0 \quad \alpha < \beta < 0 \quad 3\alpha^2 + 4\beta^2 = 12\sqrt{2} + 16\omega \quad a = 5 \quad \boxed{1} \\
 & \alpha + \beta = -4 \quad \alpha\beta = a \\
 & \Delta = 16 - 4a \geq 0 \Rightarrow a \leq 4 \\
 & \alpha = -4 - \beta \quad 3(-4 - \beta)^2 + 4\beta^2 = 12\sqrt{2} + 16\omega \Rightarrow \Delta = 36 + 24\beta + 7\beta^2 = 12\sqrt{2} + 16\omega \\
 & \beta = t + 2\sqrt{2} \Rightarrow \beta = c + d\sqrt{2} \quad a = c + d\sqrt{2} \Rightarrow \alpha = -4 - c - d\sqrt{2} \\
 & (c - d\sqrt{2})(c + d\sqrt{2}) = 4 \Rightarrow c^2 - 2d^2 = 4 \Rightarrow c = 2 \text{ یا } -2 \quad d = 0 \text{ یا } \pm 1 \\
 & \alpha^2 = 16 + 4d\sqrt{2} + 2d^2 \quad \beta^2 = 16 - 4d\sqrt{2} + 2d^2 \Rightarrow 4d = 12 \Rightarrow d = 3 \\
 & \alpha = -4 - 3\sqrt{2} \quad \beta = -4 + 3\sqrt{2}
 \end{aligned}$$

$$\begin{aligned}
 & x^2 - 11x + 18 = 0 \Rightarrow S = 0 \quad P = \frac{-11 \pm \sqrt{121 - 72}}{2} = \frac{-11 \pm 7}{2} \\
 & x^2 = t \\
 & t^2 - 11t + 18 = 0 \\
 & t = \frac{11 \pm \sqrt{49}}{2} \\
 & t_1 = \frac{11 + 7}{2} = 9 \quad t_2 = \frac{11 - 7}{2} = 2 \\
 & x = \pm 3 \text{ یا } \pm \sqrt{2}
 \end{aligned}$$

$$1) \quad x^2 - ax + b = 0$$

$$x_1 + \frac{1}{x_1} = x_2 + \frac{1}{x_2}$$

$$-\frac{1}{x_1} = \frac{a}{x_1} = x_1 + x_2$$

$$-\frac{1}{x_1} = \frac{a}{x_1} = x_1 + x_2$$

$$2) \quad x^2 + ax - 4 = 0$$

$$\left[\frac{ab}{c} \right]$$

$$1) \quad x_1 + x_2 = \frac{a}{x_1}$$

$$\frac{a}{x_1} = 1 + (x_1 + x_2)$$

$$\frac{a}{x_1} = 1 + \frac{1}{x_1} \Rightarrow a = 1$$

$$\frac{1}{x_1} + \frac{x_1 + x_2}{x_1} + x_1 x_2 = \frac{1}{x_1} - \frac{1}{x_1} - 1 = -1 \Rightarrow \frac{b}{x_1} \Rightarrow b = -4$$

$$\left[\frac{1 \cdot (-4)}{1} \right] = \left[-\frac{4}{1} \right] = -4$$

$$ax^2 + bx - c = 0$$

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

$$-\frac{b}{a} = \alpha \beta$$

$$\sqrt{\epsilon \alpha \beta - (\beta + \alpha)^2} = |\beta - \alpha|$$

$$\frac{\sqrt{\epsilon \alpha \beta - (\beta + \alpha)^2}}{\epsilon} = \beta \Rightarrow -\epsilon \alpha \beta + (\beta + \alpha)^2 = (\beta - \alpha)^2 \Rightarrow \frac{1}{\omega} = (\beta - \alpha)^2 \Rightarrow |\beta - \alpha| = \frac{1}{\omega} \times \frac{\sqrt{\epsilon \alpha \beta - (\beta + \alpha)^2}}{\epsilon}$$

$$\frac{\epsilon_0 \beta^2 + \gamma_0 \alpha^2 - \gamma_0 \beta}{\gamma_0} = \frac{1 \cdot 1}{1} = 1$$

$$\gamma_0 \beta^2 + \alpha^2 - \beta = \frac{1 \cdot 1}{1} \Rightarrow \frac{1 \cdot 1}{1} = \gamma_0 \beta^2 - (\beta - 1)^2 - \beta$$

$$\left(\frac{1 \cdot 1}{1} = \gamma_0 \beta^2 - \gamma_0 \beta + 1 \right) \alpha^2$$

$$\gamma_0 \beta^2 - \gamma_0 \beta + 1 = 0$$

$$\alpha - \beta = \frac{\sqrt{\epsilon \alpha \beta - (\beta + \alpha)^2}}{\epsilon}$$

$$x^2 - (a+1)x + a = 0$$

$$x_1 = x_1 + 1$$

$$\boxed{a=3}$$

$$\{ x_1 + (x_1 + 1) = a + 1$$

$$\{ x(x+1) = a$$

$$x^2 + x = a + 1 \Rightarrow a = x^2 + x + 1$$

$$x^2 + x = x^2 + x + 1 \Rightarrow x^2 = 1 \Rightarrow x = 1$$

$$x^2 - (3a+1)x + b = 0$$

$$x_1 = x_1 + 1$$

$$a = 3$$

$$\{ x_1 + (x_1 + 1) = 3a + 1$$

$$\{ x(x+1) = b$$

$$x^2 + x = 10 \Rightarrow x = 3$$

$$|P_2 - P_1| = 2 \cdot 3 - 3 = 3 \Rightarrow P_2 = 2 \cdot 3 = 6$$

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

$$x^2 - x - (1 + m^2) = 0$$

$$S = \frac{1}{\alpha + \beta} \quad P = \frac{-1 + m^2}{\alpha \beta}$$

$$\boxed{3 + 4 \cdot 1 = 7}$$

$$\alpha^2 + \beta^2 = 5 \Rightarrow 5^2 - 2P$$

$$1^2 - 2[-(1 + m^2)] = 1 + 2 + 2m^2 = 3 + 2m^2$$

$$m^2 \geq 0 \Rightarrow \text{مقدار موجبة}$$

$$\alpha^2 + \beta^2 = \omega$$

$$S^2 - 2PS = \omega$$

$$(a + \beta)^2 - 2(\alpha \beta)(a + \beta) = \omega$$

$$1 - 2\left(1 + \frac{1}{a}\right) = 2 - \frac{2}{a}$$

$$x = 0 \Rightarrow y = 1$$

$$A(3, 4) \quad B(-1, 4) \Rightarrow \text{نقطه اویسمی} \Rightarrow \frac{1}{2} \text{ عرض}$$

$$x = \frac{3 - 1}{2} = -1 \Rightarrow Z(-1, 1)$$

$$y = a(x+1)^2 + 1 \Rightarrow y = a(\epsilon)^2 + 1 \Rightarrow 19a + 1$$

$$-\frac{1}{a} \Rightarrow \alpha = -1 + \sqrt{-\frac{1}{a}} \quad \beta = -1 - \sqrt{-\frac{1}{a}}$$

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

$$y = a(1)^2 + 1 = \frac{-1}{1} + 1 = \frac{1}{1} \Rightarrow \boxed{\left(0, \frac{1}{1}\right)}$$