

$$3x^2 - 2x + 4 = 0 \rightarrow \alpha + \beta = \frac{2}{3}, \alpha \cdot \beta = \frac{4}{3}, \alpha = 3\beta$$

$$3\beta^2 - \frac{4}{3} = 0 \rightarrow 9\beta^2 - 4 = 0 \rightarrow 3\beta = \pm 2 \rightarrow \beta = \pm \frac{2}{3}, \alpha = \pm 2$$

$$\alpha + \beta = \frac{8}{3} \rightarrow \alpha = 8$$

$$\alpha + \beta = -\frac{8}{3} \rightarrow \alpha = -8$$

$$\left. \begin{array}{l} \alpha + \beta = \frac{8}{3} \rightarrow \alpha = 8 \\ \alpha + \beta = -\frac{8}{3} \rightarrow \alpha = -8 \end{array} \right\} |8 - (-8)| = 16$$

$$36x^2 - (m+14)x + 1 = 0 \rightarrow \frac{1}{\alpha} + \frac{1}{\beta} = 5 \rightarrow \frac{\alpha + \beta}{\alpha \cdot \beta} = 5$$

$$\alpha \cdot \beta = \frac{1}{36}, \alpha + \beta = \frac{m+14}{36}$$

$$\frac{\alpha + \beta}{\frac{1}{36}} = 5 \rightarrow \sqrt{\alpha} \cdot \sqrt{\beta} = \frac{5}{6} \rightarrow \alpha + \beta + 2\sqrt{\alpha \cdot \beta} = \frac{25}{36}$$

$$\alpha + \beta = \frac{13}{36} \rightarrow [m = -1] \rightarrow -x^2 + 3x + 2 = 0 \rightarrow \left[\frac{2}{-1} = -2 \right]$$

$$4x^3 + Kx^2 - 9x - 2 = 0, \alpha + \beta = 1, \alpha \cdot \beta = -2 \rightarrow \alpha = 2, \beta = -1$$

$$32 + 4K - 18 - 2 = -4 + K + 9 - 2$$

$$12 + 4K = 3 + K \rightarrow [K = -3]$$

$$x^2 - 6x + a = 0 \rightarrow \alpha + \beta = 6, \alpha \cdot \beta = a$$

$$2(\alpha^2 + \beta^2) + \alpha^2 - 85 + 12\sqrt{2} = 5 - 2P \rightarrow \alpha^2 - 4\alpha = 13 + 12\sqrt{2}$$

$$\alpha^2 - 6\alpha + a = 0 \rightarrow 5\alpha^2 + 24\alpha - 13 - 12\sqrt{2} = 0 \rightarrow \alpha = 3 - 2\sqrt{2}$$

$$\alpha \cdot \beta = a = 9 - 8 = 1$$

$$\beta = 3 + 2\sqrt{2}$$

$$x^4 - 7x^2 - 5 = 0 \rightarrow x^2 = t \rightarrow t^2 - 7t - 5 = 0 \rightarrow \alpha \cdot \beta = -5$$

$$\Delta = 69 \rightarrow \frac{7 \pm \sqrt{69}}{2} \rightarrow x = \pm \sqrt{\frac{7 \pm \sqrt{69}}{2}}$$

$$2P = 59 + 7\sqrt{69}$$

$$\begin{aligned}
 2x^2 - ax + b = 0 &\rightarrow \alpha_1 + \beta_1 = \frac{a}{2} \\
 2ax^2 + ax - b = 0 &\rightarrow \alpha_2 + \beta_2 = -\frac{1}{2} \uparrow + 1 = -\frac{a}{2} - \frac{1}{2} = \boxed{a-1} \\
 \alpha_1 \cdot \beta_1 = \frac{b}{2}, \alpha_2 \cdot \beta_2 = \frac{-b}{2a} = -\frac{3}{1} &\rightarrow \textcircled{-3} \quad \boxed{-2} \cdot \boxed{\frac{-6}{4}} \quad \boxed{b = -6} \\
 (\alpha_2 + 0.5)(\beta_2 + 0.5) = \frac{b}{2} &= \alpha_2 \cdot \beta_2 + 0.5\alpha_2 + 0.5\beta_2 + 0.25 = \frac{b}{2}
 \end{aligned}$$

$$\begin{aligned}
 ax^2 - ax - b = 0 &\div a \rightarrow x^2 - x - \frac{b}{a} = 0 \quad \frac{1}{2} \cdot k \rightarrow x^2 - x - k = 0 \\
 \alpha + \beta = 1, \beta^2 = \beta + k, \alpha^2 = \alpha + k &\xrightarrow{+4b} 20(\alpha + k) + 40(\beta + k) - 20\beta = 17 \\
 20\alpha + 20\beta + 60k = 17 &\stackrel{\beta=1}{=} 20 + 60k = 17 - k = -\frac{1}{20} \\
 \Delta = \frac{4}{5} - \frac{\sqrt{\Delta}}{a} = \frac{2}{15} &\rightarrow \boxed{\frac{2\sqrt{5}}{5}}
 \end{aligned}$$

$$\begin{aligned}
 x^2 - (a+1)x + a = 0 &\rightarrow \alpha_1 + \beta_1 = \frac{a+1}{1} \quad \frac{1}{4} \alpha_1 \cdot \beta_1 = \frac{a}{4} \rightarrow \frac{\alpha_1}{\beta_1} = 3 \\
 x^2 - (3a+1)x + b = 0 &\rightarrow \alpha_2 + \beta_2 = \frac{3a+1}{1} \quad \frac{1}{10} \alpha_2 \cdot \beta_2 = \frac{b}{10} \rightarrow 4, 6, \alpha_2, \beta_2 \\
 b = 24, a = 3 &\rightarrow \boxed{24 - 3 = 21}
 \end{aligned}$$

$$\begin{aligned}
 x^2 + x - 1 - m^2 = 0 &\rightarrow \alpha + \beta = -1, \alpha \cdot \beta = -1 - m^2 \\
 S^2 - 2P = 1 + 2 + 2m^2 = 2m^2 + 3 &\rightarrow \min = -\frac{\Delta}{4a} = \frac{24}{8} \\
 \Rightarrow \textcircled{3}
 \end{aligned}$$

$$\begin{aligned}
 \frac{dy}{dx} = \frac{-5+3}{2} = -1 &\xrightarrow{(-1,1)} \rightarrow y = a(x+1)^2 + 1 \\
 ax^2 + 2ax + a + 1 = 0 &\rightarrow S^2 - 2P = 5 \rightarrow (-2)^2 - 2\left(\frac{a+1}{a}\right) = 5 \\
 4 - 2 - \frac{2}{a} = 5 &\rightarrow a = \frac{-2}{3} = \frac{-2}{3} + 1 = \boxed{\frac{1}{3}}
 \end{aligned}$$