

$$\left. \begin{aligned} S &= \beta + \gamma\beta = \frac{a}{\gamma} \Rightarrow \beta = \frac{a}{\gamma} \Rightarrow \beta^2 = \frac{a^2}{\gamma^2} \\ P &= \beta \cdot \gamma\beta = \frac{a}{\gamma} \Rightarrow \beta^2 = \frac{a}{\gamma} \end{aligned} \right\} \quad \frac{a^2}{\gamma^2} = \frac{a}{\gamma} \Rightarrow a^2 = \omega\gamma \Rightarrow \boxed{a = \pm\sqrt{\omega\gamma}}$$

$$(13+14) - (13-54) = \boxed{454}$$

$$\frac{1}{\sqrt{a}} + \frac{1}{\sqrt{b}} = \omega \Rightarrow \left( \frac{\sqrt{a} + \sqrt{b}}{\sqrt{ab}} \right)^2 = \omega^2 \Rightarrow \frac{a + b + 2\sqrt{ab}}{ab} = \omega^2 \Rightarrow \frac{S + \frac{2}{\sqrt{ab}}}{\frac{1}{\sqrt{ab}}} = \omega^2$$

$$S = \frac{m+14}{14} \Rightarrow 14S + 14 = \omega^2 \Rightarrow 14S = 13 \Rightarrow S = \frac{13}{14} = \frac{m+14}{14} \Rightarrow \boxed{m = -1}$$

$$P' = \frac{\gamma}{m} = \frac{\gamma}{-1} = \boxed{-\gamma}$$

چون معادله درجه ۳ دو ریشه حقیقی دارد پس حتماً ریشه دیگر هم حقیقی است. پس داریم:

$$P(x) = f(a-x)(x-\beta)(x-\gamma) \Rightarrow -f\alpha\beta\gamma = -2 \Rightarrow \alpha\beta\gamma = \frac{1}{f} \Rightarrow \gamma = \frac{1}{f\alpha\beta}$$

$$x^2 = f \Rightarrow f(\alpha + \beta + \gamma) = K \Rightarrow -f(1 - \frac{1}{f}) = K \Rightarrow \boxed{K = -3}$$

$$2\omega(\alpha^2 + \beta^2) + \omega(\alpha^2 - \beta^2) = 2\omega(S^2 - \gamma P) + \omega(S^2 - \frac{\gamma^2}{\alpha\beta}) = 14\sqrt{2} + 18$$

$$\Rightarrow 2\omega(14 - \gamma\alpha) + \omega(-4)(\frac{-\sqrt{14-4\alpha}}{1}) = 90 - \omega\alpha + 4\sqrt{9-\alpha} = 14\sqrt{2} + 18$$

$$S = -2$$

$$P = \alpha$$

$$14 = 1$$

$$\Delta = 14 - 4\alpha$$

$$\boxed{\alpha = 1}$$

$$P(x) = x^2 - vx^2 - \omega \Rightarrow P(x) = P(-x) \Rightarrow S = 0$$

$$\Rightarrow x^2 = t \quad S = v > 0 \quad P = -\omega < 0 \Rightarrow \text{یک ریشه حقیقی} = \frac{v + \sqrt{49}}{2} = t$$

$$\Rightarrow x_1^2 = x_4^2 = \frac{v + \sqrt{49}}{2} \quad \text{دو ریشه حقیقی}$$

$$2P = 14P + 4S = 2P^2 = 2(x_1x_4)^2 = 2(x_1^2)(x_4^2) = 2\left(\frac{v + \sqrt{49}}{2}\right)^2 = 2\left(\frac{49 + 49 + 14\sqrt{49}}{4}\right)$$

$$= \frac{118 + 14\sqrt{49}}{2} = \boxed{59 + 7\sqrt{49}}$$

$$\left. \begin{aligned} S &= \frac{a}{y} \Rightarrow S' = \frac{a}{y} + 1 \\ S' &= \frac{a}{y} + 1 = -\frac{a}{y} \Rightarrow \boxed{a = -1} \end{aligned} \right\} \Rightarrow \frac{a}{y} + 1 = -\frac{a}{y} \Rightarrow \boxed{a = -1} \quad S = \frac{a}{y} = -\frac{1}{y}$$

$$P' = (x + \frac{1}{y})(\beta + \frac{1}{y}) = \alpha\beta + \frac{1}{y}(\alpha + \beta) + \frac{1}{y^2} = P + \frac{S}{y} + \frac{1}{y^2} = \frac{b}{y} + \frac{-1}{y} + \frac{1}{y^2} = \frac{b}{y}$$

$$P' = \frac{-y}{y^2} = -\frac{1}{y}$$

$$\Rightarrow \frac{b}{y} = -\frac{1}{y} \Rightarrow \boxed{b = -1} \quad \left[ \frac{ab}{f} \right] = \left[ \frac{-1}{-1} \right] = \boxed{1}$$

$$f_0 \beta^y + y_0 \alpha^y - y_0 \beta = 1y \Rightarrow y_0 (\alpha^y + \beta^y) + y_0 \beta (\beta - 1) = 1y$$

$$S = 1 \Rightarrow \beta - 1 = \beta - \beta - \alpha = -\alpha$$

$$\Rightarrow y_0 (1 - yP) - y_0 P = 1y$$

$$\Rightarrow 1 - yP = \frac{1y}{y_0} \Rightarrow \left. \begin{aligned} P &= \frac{1}{y_0} \\ P &= \frac{-b}{a} \end{aligned} \right\} \Rightarrow \frac{1}{a} = \frac{1}{y_0} \Rightarrow a = -y_0 b$$

$$|\alpha - \beta| = \frac{\sqrt{\Delta}}{|a|} = \frac{\sqrt{\alpha^2 + 4ab}}{|a|} = \frac{\sqrt{f_0 y_0 b^2 - 1 y_0 b^2}}{y_0 b} = \frac{b \sqrt{y_0 y_0}}{y_0 b} = \frac{1 \sqrt{y_0}}{y_0} = \boxed{\frac{\sqrt{y_0}}{y_0}}$$

$$\left. \begin{aligned} S &= \beta + \beta + y = a + 1 \\ P &= \beta(\beta + y) = a \end{aligned} \right\} \Rightarrow \frac{\beta^y + y\beta + 1}{a} = y\beta + y \Rightarrow \beta^y = 1 \Rightarrow \beta = \pm 1 \Rightarrow \beta = 1, \beta + y = y$$

$$P = y \times 1 = \boxed{y} = a$$

$$S' = y + y + y = y a + 1 = y \times y + 1 = 10 \Rightarrow y = f \quad f \times y = \boxed{yf}$$

$$yf - y = \boxed{yf}$$

$$S' - yP = 1 + ym^y + y = y + ym^y$$

$$\min y + ym^y = \boxed{y}$$

$$S = -1$$

$$P = -1 - m^y$$

$$\Delta > 0 \quad \text{مميزا موجب}$$

$$f(x) = ax^y + bx + c = 0 \Rightarrow S' - yP = \omega \Rightarrow f - yP = \omega \Rightarrow P = \frac{f}{y}$$

$$f(y) = f(-\omega) \Rightarrow S = y + (-\omega) = -y \quad \text{مميزا موجب} = \frac{-y}{y} = -1$$

$$\left( \frac{f(y)}{y} \right)' = \left| \frac{y}{y} \right| = -1 \Rightarrow K(x+1)^y + 1 = K(x^y + yx + 1) + 1 = Kx^y + yKx + K + 1$$

$$P = \frac{K+1}{K} = \frac{-1}{y} \Rightarrow yK + y = -K$$

$$yK = -y \Rightarrow K = \frac{-y}{y}$$

$$f(0) = K + 1 = \frac{-y}{y} + 1 = \boxed{\frac{1}{y}}$$