

$$\begin{cases} \alpha = 3\beta \\ \alpha\beta = \frac{\epsilon}{3} \end{cases} \Rightarrow 3\beta \times \beta = \frac{\epsilon}{3} \Rightarrow \beta = \pm \frac{\sqrt{\epsilon}}{3} \Rightarrow \alpha = \pm \sqrt{\epsilon}$$

$$\alpha + \beta = \frac{a}{3} \Rightarrow \begin{cases} \sqrt{\epsilon} + \frac{\sqrt{\epsilon}}{3} = \frac{a}{3} \Rightarrow a = 1 \\ (-\sqrt{\epsilon}) + (-\frac{\sqrt{\epsilon}}{3}) = \frac{a}{3} \Rightarrow a = -1 \end{cases} \Rightarrow 1 - (-1) = \boxed{14}$$

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$$\sqrt{\frac{1}{\alpha}} + \sqrt{\frac{1}{\beta}} = \omega \Rightarrow \frac{1}{\sqrt{\alpha}} + \frac{1}{\sqrt{\beta}} = \omega \xrightarrow{\text{توکل}} \frac{1}{\alpha} + \frac{1}{\beta} + \frac{2}{\sqrt{\alpha\beta}} = \omega^2 \Rightarrow \frac{\alpha + \beta}{\alpha\beta} + \frac{2}{\sqrt{\alpha\beta}} = \omega^2$$

$$\Rightarrow \frac{\frac{m+14}{34}}{\frac{1}{34}} + \frac{2}{\sqrt{\frac{1}{34}}} = \omega^2 \Rightarrow m+14 + \frac{2}{\sqrt{\frac{1}{34}}} = \omega^2 \Rightarrow m = -1 \rightarrow -x^2 + 3x + 2 \rightarrow \boxed{P = -2}$$

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$$\alpha, \beta, \gamma = \text{ریشه‌ها} \rightarrow ax^2 + bx + cx + d = 0 \rightarrow \alpha\beta\gamma = -\frac{d}{a}, \alpha + \beta + \gamma = -\frac{b}{a} \Rightarrow \alpha\beta\gamma = \frac{1}{\gamma}$$

$$\xrightarrow{\alpha\beta = -2} \gamma = -\frac{1}{\epsilon} \Rightarrow \alpha + \beta + \gamma = -\frac{k}{\epsilon} \Rightarrow 1 + (-\frac{1}{\epsilon}) = -\frac{k}{\epsilon} \Rightarrow \frac{\epsilon}{\epsilon} = -\frac{k}{\epsilon} \Rightarrow \boxed{k = -3}$$

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$$\Delta = 4^2 - 4(1)(a) = 16 - 4a \rightarrow \alpha = \frac{-4 - \sqrt{16 - 4a}}{2} \Rightarrow \alpha^2 = \frac{16 + 16 - 4a + 12\sqrt{4 - a}}{4} \rightarrow$$

$$\text{چون } \alpha^2 - 2\alpha + 1 = 0 \text{ باشد} \rightarrow \sqrt{16 - 4a} = 12\sqrt{4 - a} \Rightarrow \sqrt{16 - 4a} = 12\sqrt{4 - a} \Rightarrow 16 - 4a = 144(4 - a) \Rightarrow 16 - 4a = 576 - 576a \Rightarrow \boxed{a = 1}$$

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$$\text{مجموع ریشه‌ها} \rightarrow 2p^2 - 35p + 15 \Rightarrow 2p^2 \xrightarrow{p^2 = t} t^2 - 35t + 15 = 0 \rightarrow t = \frac{35 \pm \sqrt{109}}{2}, t = \frac{35 - \sqrt{109}}{2} \text{ غرض}$$

$$p^2 = \frac{35 \pm \sqrt{109}}{2} \rightarrow \begin{cases} \sqrt{\frac{35 + \sqrt{109}}{2}} \\ -\sqrt{\frac{35 + \sqrt{109}}{2}} \end{cases} \Rightarrow P = -\sqrt{\frac{(35 + \sqrt{109})^2}{4}} \Rightarrow 2p^2 = \frac{(35 + \sqrt{109})^2}{2} = \boxed{625 + 35\sqrt{109}}$$

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$\begin{aligned} \text{ریشه های} \\ \text{معادله دوم} = \alpha, \beta &\rightarrow \sigma^2_{\text{میانگین}} = \frac{1}{r} + \beta, \frac{1}{r} + \alpha \rightarrow \alpha + \beta = -\frac{1}{r}, \alpha\beta = -\frac{r}{a} \rightarrow \\ \alpha + \beta + 1 = \frac{a}{r} &\Rightarrow a = 1, \left(\alpha + \frac{1}{r}\right)\left(\beta + \frac{1}{r}\right) = \alpha\beta + \frac{1}{r}(\alpha + \beta) + \frac{1}{r^2} \rightarrow -\frac{r}{1} + \frac{1}{r}\left(-\frac{1}{r}\right) + \frac{1}{r^2} = \\ -r &\rightarrow \frac{b}{r} = -r \rightarrow b = -r \rightarrow \left[\frac{-r(1)}{r}\right] = \boxed{-r} \end{aligned}$	۶
$\begin{aligned} r_0\beta^r + r_0\alpha^r + r_0\beta^r - r_0\beta = 1V &\Rightarrow r_0(\alpha^r + \beta^r) + r_0(\beta^r - \beta) = 1V = r_0(\delta^r - r\rho) + r_0(\beta^r - \beta) = 1V \rightarrow \delta = -\frac{a}{a}, \rho = \frac{b}{a} \\ \alpha\beta^r - \alpha\beta - b = 0 &\Rightarrow a(\beta^r - \beta) = b \Rightarrow \beta^r - \beta = \frac{b}{a} \rightarrow r_0\left(1 + \frac{r}{a}\right) + r_0\left(\frac{b}{a}\right) = 1V \Rightarrow \frac{r_0b}{a} = -r \\ \frac{b}{a} = -\frac{1}{r_0} &\rightarrow \frac{\sqrt{\Delta}}{ a } = \frac{\sqrt{\epsilon a^r - \epsilon a(-b)}}{ a } = \frac{\sqrt{a^r - \epsilon ab}}{ a } \Rightarrow \sqrt{1 + \epsilon\left(-\frac{1}{r_0}\right)} = \boxed{\frac{r}{\sqrt{\omega}}} \end{aligned}$	۷
$\begin{aligned} \text{همه ضرایب} \\ \text{ریشه های} \\ \text{و درجه ضرایب} \\ r = a \end{aligned} \rightarrow x^r - 10x + b \rightarrow \alpha + \beta = 10 \rightarrow \alpha = \epsilon, \beta = \gamma \Rightarrow \epsilon x \gamma - 10x^3 = \boxed{r1}$	۸
$\delta = 1, \rho = 1 - m^r \Rightarrow \alpha^r + \beta^r = (-1)^r - r(-1 - m^r) = 1 + r + rm^r = rm^r + r \rightarrow \sigma^2_{\text{میانگین}} = \boxed{r}$	۹
$\begin{aligned} x_0 = -1 &\rightarrow \delta(-1, 1) \Rightarrow y = ax^r + rax + a + 1 \rightarrow \alpha^r + \beta^r = \omega \Rightarrow \delta^r - r\rho = \omega \Rightarrow \left(-\frac{r_0}{a}\right)^r - r\left(\frac{a+1}{a}\right) \\ = \omega &\Rightarrow -r\left(\frac{a+1}{a}\right) = 1 \Rightarrow \frac{a+1}{a} = -\frac{1}{r} \Rightarrow a = -\frac{r}{r} \rightarrow \sigma^2_{\text{میانگین}} = a + 1 \Rightarrow \boxed{\frac{1}{r}} \end{aligned}$	۱۰