

$$x^2 - 2x + 1 = 0 \quad p = \frac{c}{a} = \frac{1}{1} = 1 \quad x^2 - 2x + 1 = 0 \rightarrow x^2 = 2x - 1 \Rightarrow x = \frac{2x-1}{x}$$

$$x_1 = 1 \quad x = \frac{2}{x} \rightarrow \beta = 2 \Rightarrow S = \frac{b}{a} = \frac{2}{1} = 2 = \frac{1}{x} + \frac{1}{x} = \frac{2}{x} \Rightarrow a = 1$$

$$x = -\frac{1}{x} \rightarrow \beta = -1 \Rightarrow S = \frac{b}{a} = \frac{2}{1} = 2 = \frac{1}{x} + \frac{1}{x} = \frac{2}{x} \Rightarrow a = -1$$

$$|1 - (-1)| = 14$$

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$$\sqrt{\frac{1}{\alpha}} + \sqrt{\frac{1}{\beta}} = \frac{1}{\sqrt{\alpha}} + \frac{1}{\sqrt{\beta}} = 5 \rightarrow \frac{\sqrt{\beta} + \sqrt{\alpha}}{\sqrt{\alpha\beta}} = 5 \rightarrow \frac{\sqrt{\alpha} + \sqrt{\beta}}{\frac{1}{4}} = 5 \rightarrow \sqrt{\alpha} + \sqrt{\beta} = \frac{5}{4}$$

$$\alpha + \sqrt{\alpha\beta} + \beta = \frac{25}{16} \rightarrow \alpha + \beta = \frac{25}{16} - \frac{1}{4} \rightarrow \alpha + \beta = \frac{21}{16}$$

$$S = \frac{-b}{a} = \frac{m+12}{16} = \frac{14}{16} \Rightarrow m+12 = 14 \Rightarrow m = 2$$

$$\begin{cases} -x^2 + 3x + 2 = 0 \\ p = \frac{c}{a} = -2 \end{cases}$$

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$$\begin{cases} \alpha + \beta = 1 \\ \alpha \cdot \beta = -2 \end{cases} \rightarrow 0 = m^2 - 5m + p \Rightarrow m^2 - 5m - 2 = 0 \rightarrow (m+1)(m-2) = 0 \Rightarrow \begin{cases} m = -1 \\ m = 2 \end{cases}$$

$$\Rightarrow (m=2) \rightarrow E(1) + EK - 11 - 2 = 0 \Rightarrow EK = 11 \Rightarrow K = -3$$

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$$m^2 + 4m + a = 0 \quad \alpha < \beta < 0 \quad 3\alpha^2 + 2\beta^2 = 12\sqrt{2} + 18$$

$$3\alpha^2 + 2\beta^2 = \alpha^2 + 2(\alpha^2 + \beta^2) = 12\sqrt{2} + 18 \rightarrow \alpha^2 + 2(S^2 - 2P) = 12\sqrt{2} + 18 \quad S = \frac{-b}{a} = \left(\frac{-6}{2}\right)^2 = 9 - 2\left(\frac{c}{a}\right) = 9 - 2a$$

$$\alpha^2 + 18 - 4a = 12\sqrt{2} + 18 \rightarrow \alpha^2 = 12\sqrt{2} + 13 + 4a$$

$$\Delta = 36 - 4a \rightarrow \alpha = \frac{-4 \pm \sqrt{36 - 4a}}{2} \rightarrow \alpha^2 = \frac{16 \pm 8\sqrt{36 - 4a}}{4} \rightarrow \alpha^2 = 4 \pm 2\sqrt{36 - 4a}$$

$$12\sqrt{2} + 13 + 4a = 4 \pm 2\sqrt{36 - 4a} \rightarrow \boxed{a = 1}$$

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$$m^2 - 4m - 5 = 0 \xrightarrow{m^2, t} t^2 - 4t - 5 = 0 \quad \begin{cases} t = \frac{4 + \sqrt{49}}{2} \\ t = \frac{4 - \sqrt{49}}{2} \end{cases}$$

$$t = m^2 = \frac{4 + \sqrt{49}}{2} \rightarrow m = \pm \sqrt{\frac{4 + \sqrt{49}}{2}} \rightarrow S = 0, P = \left(\sqrt{\frac{4 + \sqrt{49}}{2}}\right) \left(-\sqrt{\frac{4 + \sqrt{49}}{2}}\right) = -\frac{4 + \sqrt{49}}{2}$$

$$3P^2 + 5P + 2 = 3\left(-\frac{4 + \sqrt{49}}{2}\right)^2 + 5\left(-\frac{4 + \sqrt{49}}{2}\right) + 2 = \frac{111 + 14\sqrt{49}}{2} = \boxed{59 + 7\sqrt{49}}$$

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$\frac{r_m^r - a_m + b = 0}{\alpha, \beta} \quad \frac{r a m^r + a m - 4 = 0}{(\alpha - 1, a), (\beta - 1, a)}$ $S = (\alpha - 1, a) + (\beta - 1, a) = \alpha + \beta - 1 \Rightarrow \frac{a}{r} - 1 = \frac{-\alpha}{r\alpha} \Rightarrow \frac{-1}{r} = \frac{a-r}{r} \Rightarrow a-r = -1 \Rightarrow a=1$ $P = (\alpha - 1, a)(\beta - 1, a) = \alpha\beta - 1\alpha a - 1\alpha\beta + 1\alpha a = \frac{rb-a+1}{r} = \frac{-r}{a} \xrightarrow{a=1} \frac{rb}{r} = -r \Rightarrow b=-4$ $\left[\frac{ab}{r} \right] = \left[\frac{(1)(-4)}{r} \right] = \boxed{-2}$	6
$g m^r - a m - b = 0 \quad \epsilon \cdot \beta^r + r \cdot d^r - r \cdot \beta = 14$ $\rightarrow \alpha + \beta = \frac{-(-a)}{a} = 1 \Rightarrow \alpha = 1 - \beta \rightarrow \epsilon \cdot \beta^r + r(1-\beta)^r - r \cdot \beta = 14 \rightarrow \epsilon \cdot \beta^r + r\beta^r - r\beta + r - r \cdot \beta = 14$ $4\beta^r - 4\beta + r = 0 \rightarrow r \cdot \beta^r - r \cdot \beta + 1 = 0 \quad \Delta = 20 - 4(r) = 4r \quad \alpha = \frac{r \pm \sqrt{4r}}{2}$ $\omega \text{ قيمتين } \left \frac{r \pm \sqrt{4r} - r \pm \sqrt{4r}}{r} \right = \frac{r(\pm\sqrt{4r})}{r} = \boxed{\frac{\pm\sqrt{4r}}{r}}$	7
$x^r - (a+1)x + a = 0 \rightarrow \alpha - \beta = \frac{\sqrt{\Delta}}{ a } = r \rightarrow \sqrt{(a+1)^2 - 4a} = r \xrightarrow{a=1} a^2 + 2a + 1 - 4a = 2 \rightarrow a^2 - 2a - 1 = 0$ $\rightarrow (a-3)(a+1) = 0 \rightarrow a=3 \Rightarrow m^r - 4m + 3 = 0 \rightarrow (m-1)(m-3) = 0 \Rightarrow m=1, m=3 \quad \text{قوة}$ $a=-1 \Rightarrow m^r - 1 = 0 \Rightarrow m=1, m=-1 \rightarrow \text{قوة}$ $m^r - (4a+1)m + b = 0 \xrightarrow{a=3} m^r - 13m + b = 0 \rightarrow \alpha - \beta = \frac{\sqrt{\Delta}}{ a } = r \rightarrow \sqrt{\Delta} = r \rightarrow \Delta = 2$ $100 - 4b = 2 \Rightarrow 4b = 98 \Rightarrow b = 24.5 \quad m^r - 13m + 24.5 = 0 \rightarrow (m-4)(m-2) = 0 \rightarrow m=4, m=2$ $\omega \text{ قيمتين } (4 \times 2) - (1 \times 3) = 28 - 3 = \boxed{25}$	8
$S = \alpha + \beta = -1 \quad P = d\beta = -m^r - 1$ $\alpha^r + \beta^r, S^r - rP = 1 - r(-m^r - 1) = 1 + r(m^r + 1) = 1 + rm^r + r = rm^r + r + 1 \rightarrow \text{قيمة متكررة في } m \text{ مستطرد}$ $\rightarrow \boxed{\text{قيمة متكررة في } m = 3}$	9
$A(x, y) \left\{ \rightarrow x_5 = \frac{r-a}{r} = -1, y_5 = +1 \right.$ $B(-a, y) \left\{ \rightarrow y = a(n-h)^r + k \rightarrow y = a(n+1)^r + 1 \rightarrow y = an^r + ram + a + 1$ $\alpha^r + \beta^r = S^r - rP = \omega \rightarrow (-r)^r - r\left(\frac{a+1}{a}\right) = \omega = -r\left(\frac{a+1}{a}\right) + 1 \Rightarrow \frac{a+1}{a} = -\frac{1}{r} - ra + r = -a$ $\rightarrow y = -\frac{r}{r} n^r - \frac{r}{r} n + \frac{1}{r} \rightarrow \boxed{\frac{1}{r}}$	10