

$$3x^2 - ax + 4 = 0$$

$$\alpha = 3\beta$$

$$\alpha + \beta = \frac{a}{3}$$

$$\alpha \cdot \beta = \frac{4}{3} \rightarrow (3\beta) \cdot \beta = \frac{4}{3} \rightarrow \beta^2 = \frac{4}{9} \rightarrow \beta = \pm \frac{2}{3} \rightarrow \begin{cases} \beta = \frac{2}{3} \rightarrow \alpha = 2 \rightarrow S_1 = 2 + \frac{2}{3} = \frac{8}{3} \\ \beta = -\frac{2}{3} \rightarrow \alpha = -2 \rightarrow S_2 = -2 - \frac{2}{3} = -\frac{8}{3} \end{cases}$$

$$S_1 = \frac{a_1}{3} = \frac{8}{3} = \frac{a_1}{3} \rightarrow a_1 = 8$$

$$S_2 = \frac{a_2}{3} = -\frac{8}{3} = \frac{a_2}{3} \rightarrow a_2 = -8$$

$$\boxed{a_1 - a_2 = 8 - (-8) = 16}$$

$$34x^2 - (m+14)x + 1 = 0$$

$$\frac{1}{\sqrt{\alpha}} + \frac{1}{\sqrt{\beta}} = \Delta \rightarrow \frac{\sqrt{\alpha} + \sqrt{\beta}}{\sqrt{\alpha\beta}} = \frac{\sqrt{\alpha+13+2\sqrt{\alpha\beta}}}{\sqrt{\alpha\beta}} = \frac{\sqrt{S+2\sqrt{P}}}{\sqrt{P}} = \Delta$$

$$P = \frac{1}{34} \rightarrow \frac{\sqrt{S+\frac{1}{34}}}{\frac{1}{34}} = \Delta \rightarrow \sqrt{S+\frac{1}{34}} = \frac{\Delta}{34} \rightarrow S + \frac{1}{34} = \frac{\Delta^2}{34} \rightarrow S = \frac{\Delta^2 - 1}{34} = \frac{m+14}{34}$$

$$\Rightarrow \boxed{m = -1} \rightarrow mn^2 + 14n + 1 = 0 \rightarrow -n^2 + 14n + 1 = 0 \rightarrow P = \frac{c}{a} = \frac{1}{-1} = -1$$

$$5x^2 + 12x^2 - 9x - 2 = 0$$

$$\alpha + \beta = 1 \rightarrow \alpha = 1 - \beta$$

$$\alpha \cdot \beta = -2$$

$$\beta(1-\beta) = -2 \rightarrow \beta^2 - \beta - 2 = 0 \rightarrow (\beta-2)(\beta+1) = 0$$

$$\beta = 2 \rightarrow \alpha = -1$$

$$\beta = -1 \rightarrow \alpha = 2$$

چون یکی از ضرایب منفی نیست
پس جمع ضرایب جلایب با مجموع
ضرایب جلایب منفی برابر است

$$\frac{5+(-9)}{-1} = k + (-2) \rightarrow \boxed{k = -3}$$

$$x^2 + 4x + a = 0 \rightarrow \alpha = \frac{-4 - \sqrt{4(4-a)}}{2} = -2 - \sqrt{4-a}$$

$$\beta = \frac{-4 + \sqrt{4(4-a)}}{2} = -2 + \sqrt{4-a}$$

$$\alpha^2 = (-2 - \sqrt{4-a})^2 = 4 - a + 4\sqrt{4-a} \rightarrow 3\alpha^2 = 12 - 3a + 12\sqrt{4-a}$$

$$\beta^2 = (-2 + \sqrt{4-a})^2 = 4 - a - 4\sqrt{4-a} \rightarrow 2\beta^2 = 8 - 2a - 8\sqrt{4-a}$$

$$\Rightarrow 3\alpha^2 + 2\beta^2 = 20 - 5a + 4\sqrt{4-a} = 12\sqrt{2} + 18 \rightarrow 9 - 5a = 18 \rightarrow \boxed{a = -1}$$

$$x^2 - 5x^2 - 5 = 0 \rightarrow x^2 = \frac{-b \pm \sqrt{\Delta}}{2a} \rightarrow x^2 = \frac{5 \pm \sqrt{49}}{2} \rightarrow \text{چون } \frac{5 + \sqrt{49}}{2} \text{ کسری است}$$

$$\Rightarrow x^2 = \frac{5 + \sqrt{49}}{2} \rightarrow x = \pm \sqrt{\frac{5 + \sqrt{49}}{2}}$$

$$S = \sqrt{\frac{5 + \sqrt{49}}{2}} + \left(-\sqrt{\frac{5 + \sqrt{49}}{2}}\right) = 0$$

$$P = -\left(\frac{5 + \sqrt{49}}{2}\right) \rightarrow PP^r = 3SP + 2S = 2\left(-\frac{5 + \sqrt{49}}{2}\right) + 0 = -5 - \sqrt{49} = \boxed{-12}$$

$$r m^r - a m + b = 0 \rightarrow (1)$$

$$r a m^r + a m - 4 = 0 \rightarrow (2)$$

$$S_1 - S_r = 1 \rightarrow \frac{a}{r} - \left(\frac{-a}{r a} \right) = 1 \rightarrow a+1 = r \rightarrow \boxed{a=+1}$$

$$(\alpha + \frac{1}{r})(\beta + \frac{1}{r}) = \frac{\alpha\beta}{-r} + \frac{1}{r}(\alpha + \beta) + \frac{1}{r} = \frac{b}{r} \rightarrow \boxed{b=-4}$$

$$\left[\frac{a}{r} \right] = \left[\frac{-4}{r} \right] = \boxed{-2}$$

$$a m^r - a m - b = 0 \rightarrow \alpha + \beta = 1, \alpha \cdot \beta = -\frac{b}{a} \rightarrow \beta(1-\beta) = -\frac{b}{a} \rightarrow \beta^r - \beta = \frac{b}{a}$$

$$r_0 \beta^r + r_0 \alpha^r - r_0 \beta = 14 \rightarrow r_0(\alpha^r + \beta^r) + r_0(\beta^r - \beta) = 14 \rightarrow r_0(1 + \frac{b}{a}) + \frac{r_0 b}{a} = 14$$

$$2) \frac{r_0 b}{a} = -r \rightarrow \frac{b}{a} = -\frac{r}{r_0} \rightarrow a = -r_0 b$$

$$2) -r_0 b m^r + r_0 m - b = 0 \rightarrow \text{المعادلة} = \frac{\sqrt{\Delta}}{|a|} = \frac{\sqrt{r_0 b^r - 1 \cdot b^r}}{|-r_0 b|} = \frac{\sqrt{r_0 b^r}}{|-r_0 b|} = \left| \frac{\sqrt{r_0 b^r}}{\frac{r_0 b}{\sqrt{a}}}} \right|$$

$$2) \left| \frac{\sqrt{r_0 b^r}}{\frac{r_0 b}{\sqrt{a}}} \right| = \frac{r}{\sqrt{a}}$$

$$m^r - (a+1)m + a = 0 \rightarrow S_1 = a = r$$

$$m_1 + m_r = a+1 \xrightarrow{m_r = r} r m_1 + r = a+1 \rightarrow a = r m_1 + 1$$

$$m_1 \cdot m_r = a \xrightarrow{m_r = r} a = m_1 + 1 \quad m_1^r + r m_1 = r m_1 + 1 \rightarrow m_1 = \pm 1 \quad \xrightarrow{m_r, m_1} \boxed{m_1 = 1}, \boxed{m_r = r}$$

$$\Rightarrow a = r(1+1) = r$$

$$m^r - (r+1)m + b = 0$$

$$m_r + m_f = r+1 \xrightarrow{m_f = r} r m_r + r = r+1 \xrightarrow{a=r} r m_r + r = 1 \rightarrow \boxed{m_r = 1}, \boxed{m_f = r}$$

$$m_r \cdot m_f = b \Rightarrow r \cdot r = b \rightarrow b = r^2$$

$$S_r = b = r^2$$

$$\boxed{S_r - S_1 = r^2 - r = r(r-1)}$$

$$m^r + m - 1 - m^r = 0$$

$$\alpha + \beta = -1 \rightarrow \alpha = -1 - \beta$$

$$\alpha \cdot \beta = -(1+m^r)$$

$$\alpha^r + \beta^r = (\alpha + \beta)^r - r \alpha \beta = 1 + r + r m^r = r m^r + r \rightarrow \alpha^r + \beta^r = r m^r + r$$

$$\text{بما أن } \alpha^r + \beta^r \text{ مقدار } m^r \text{، إذاً } \Rightarrow m=0 \rightarrow \boxed{\alpha^r + \beta^r = r}$$

بما أن m مقدار m است

$$A(r, y)$$

$$B(-2, y)$$

$$\xrightarrow[\text{بارك}]{\text{خط عرض بارك}} \quad \text{المسافة} = \frac{r + (-2)}{r} \rightarrow m_3 = -1$$

$$\Rightarrow S(-1, 1) \rightarrow y = a(m+1)^r + 1 \rightarrow y = a m^r + r a m + a + 1$$

$$\alpha^r + \beta^r = (\alpha + \beta)^r - r \alpha \beta = S^r - r P \rightarrow \left(\frac{-r a}{r} \right)^r - r \left(\frac{a+1}{a} \right) = 1 \rightarrow \frac{r}{a} = r \rightarrow a = \frac{r}{r}$$

$$\boxed{a+1 = \frac{r}{r} + 1 = \frac{1}{r}}$$