

$$S \leq \alpha + \beta \stackrel{\alpha \leq \beta}{\Rightarrow} \alpha + \beta \leq \frac{a}{\alpha} \Rightarrow \alpha \beta \leq \frac{a}{\alpha} \Rightarrow 12\beta \leq a$$

$$P \leq \alpha \beta \stackrel{\alpha \leq \beta}{\Rightarrow} \alpha \beta \leq \frac{a}{\alpha} \Rightarrow \alpha \beta^2 \leq \frac{a}{\alpha} \Rightarrow 9\beta^2 \leq a \Rightarrow \beta \leq \pm \frac{\sqrt{a}}{3}$$

$$\Rightarrow \alpha \leq \pm 18 \Rightarrow |18 - (-1)| = 19$$

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$$\frac{1}{\sqrt{\alpha}} + \frac{1}{\sqrt{\beta}} = \frac{\sqrt{\alpha + \beta}}{\sqrt{\alpha\beta}} = \frac{\sqrt{(\sqrt{\alpha} + \sqrt{\beta})^2}}{\sqrt{\alpha\beta}} = \sqrt{\frac{\alpha + \beta + 2\sqrt{\alpha\beta}}{\alpha\beta}} \leq \sqrt{\frac{5 + 2\sqrt{P}}{P}} = \sqrt{\frac{m+1}{\frac{1}{P}}} = \sqrt{\frac{m+1}{\frac{1}{P}}} = \sqrt{\frac{m+1}{1}}$$

$$\sqrt{\frac{m+1}{1}} \leq 0 \Rightarrow m+1 \leq 0 \Rightarrow m \leq -1 \Rightarrow 9m^2 + 12m + 5 \leq 0 \Rightarrow 0 \leq \Delta \Rightarrow$$

معادله ریشه ندارد و یکی $\Delta < 0$ چون صورت همیشه نامنفی ریشه ندارد

$$P \leq \frac{a}{\alpha} \leq \frac{a}{9}$$

فواصله مقدار آری را محاسبه کردیم

$$(\alpha + \beta)^2 \leq \alpha^2 + \beta^2 + 2\alpha\beta \Rightarrow (\alpha + \beta)^2 \leq \alpha^2 + \beta^2 + \frac{2a}{\alpha} \Rightarrow \alpha^2 + \beta^2 \leq 0$$

$$(\alpha - \beta)^2 \leq \alpha^2 - 2\alpha\beta + \beta^2 \Rightarrow (\alpha - \beta)^2 \leq \alpha^2 - 2\alpha\beta + \beta^2 \Rightarrow (\alpha - \beta)^2 \leq 0 \Rightarrow \alpha = \beta = 0$$

$$\Rightarrow \begin{cases} \alpha + \beta = 1 \\ \alpha - \beta = 3 \end{cases} \Rightarrow \alpha = 2, \beta = -1$$

$$\alpha \leq \beta \Rightarrow \begin{pmatrix} 2 \\ -1 \end{pmatrix} + \begin{pmatrix} 1 \\ 3 \end{pmatrix} - 9 \begin{pmatrix} 2 \\ -1 \end{pmatrix} - 12 \begin{pmatrix} 2 \\ -1 \end{pmatrix} \leq 0 \Rightarrow k = -12$$

$$m^2 + 12m + 5 \leq 0 \Rightarrow \beta = \frac{-12 \pm \sqrt{144 - 20}}{2} = \frac{-12 \pm \sqrt{124}}{2} = -6 \pm \sqrt{31}$$

$$D = m^2 - 4a \Rightarrow \alpha = \frac{-6 - \sqrt{31} - 4a}{2} \leq -6 \pm \sqrt{31} - a \Rightarrow \alpha^2 \leq 9 + 12 - a + 4\sqrt{31} - a$$

$$2\alpha^2 + \alpha^2 + 2\beta^2 \leq 12\sqrt{31} + 10 \Rightarrow 2(\alpha^2 + \beta^2) + \alpha^2 \leq 12\sqrt{31} + 10$$

$$\frac{2(-6 - \sqrt{31})^2}{2(-6 - \sqrt{31})} + 12 - a + 4\sqrt{31} - a \leq \frac{12\sqrt{31} + 10}{2\sqrt{31}} \Rightarrow -5a + 4\sqrt{31} - a \leq 0 + 4\sqrt{31}$$

$a \leq 1 \Rightarrow 12 - 4a \leq 12 \Rightarrow 0$
مقدار قابل قبول است

$$m^2 - 12m - 5 \leq 0 \Rightarrow \alpha, \beta \text{ ریشه های معادله باشد}$$

$\alpha - \beta$ ریشه های معادله است

$$S \leq 0 \Rightarrow \text{پس دو ریشه برابر می باشد}$$

$$\Rightarrow 2P^2 - 12SP + 2S^2 = 2P^2 \Rightarrow 2(\alpha^2 + \beta^2)$$

$$m^2 - 12m - 5 \leq 0 \Rightarrow t \leq \frac{12 \pm \sqrt{144 - 20}}{2} \Rightarrow m \leq \frac{12 \pm \sqrt{124}}{2}$$

$$\Rightarrow m \leq \pm \sqrt{\frac{12 \pm \sqrt{124}}{2}} \Rightarrow \alpha^2 + \beta^2 \leq \frac{12 \pm \sqrt{124}}{2} \Rightarrow 2P^2 \leq 2 \left(\frac{12 \pm \sqrt{124}}{2} \right)^2$$

$$\frac{12 \pm \sqrt{124} + 12\sqrt{124}}{2} \leq \frac{144 + 12\sqrt{124}}{2} \Rightarrow 59 + \sqrt{124}$$

$$1) 2m^2 - a\alpha + b \leq 0 \rightarrow (\alpha + 0/10), (\beta + 0/10) \Rightarrow S_1 \leq \frac{a}{r}, P_1 \leq \frac{b}{r}$$

$$2) 2a\alpha^2 + a\alpha - 9 \leq 0 \rightarrow \alpha, \beta \Rightarrow S_2 \leq \frac{1}{r}, P_2 \leq -r$$

$$S_1 \leq \alpha + \beta + 0/10 + 0/10 \Rightarrow -\frac{1}{r} + 1 \leq \frac{a}{r} \Rightarrow a \leq 1$$

$$S_2 \leq \alpha + \beta$$

$$\left[\frac{ab}{r} \right] \leq \left[\frac{a}{r} \right] \leq \left[\frac{b}{r} \right] \leq 1$$

$$P_1 \leq (\alpha + 0/10)(\beta + 0/10) \leq \alpha\beta + 0/10(\alpha + \beta) + 0/10 \Rightarrow -r + \left(-\frac{1}{r}\right) + \left(\frac{1}{r}\right) \leq \frac{b}{r} \Rightarrow b \leq -r$$

$$P_2 \leq \alpha\beta$$

$$2a\alpha^2 + a\alpha + b = 0 \Rightarrow \begin{cases} S = \frac{a}{r} \\ P = \frac{b}{r} \end{cases}$$

$$2a\alpha^2 + a\alpha - 4 = 0 \Rightarrow \begin{cases} S = \frac{1}{r} \rightarrow \alpha + \beta = \frac{1}{r} = \frac{a}{r} \rightarrow a = 1 \\ P = -r \rightarrow b = -4 \end{cases}$$

$$\left[\frac{ab}{r} \right] = -r$$

$$\frac{\alpha + \beta + r\sqrt{\alpha\beta}}{\alpha\beta} = r\omega \rightarrow \frac{u + 1/r}{1/r} + r\sqrt{\frac{1}{r\omega}} \rightarrow u + 1/r + 1/r = r\omega \rightarrow u = -1$$

$$\rightarrow -a^r + r\alpha + r \rightarrow \frac{c}{a} = -r$$

$$\begin{aligned} r_0 p^r + r_0 \alpha^r - r_0 \beta^r &\leq 1/r \Rightarrow r_0 (\beta^r - \alpha^r) + r_0 (\beta^r + \alpha^r) \leq 1/r \\ \alpha n^r - \alpha n - b &\leq 0 \Rightarrow \alpha (\beta^r - \beta) \leq b \Rightarrow \beta^r - \beta \leq \frac{b}{\alpha} \end{aligned} \Rightarrow r_0 \left(\frac{b}{\alpha}\right) + r_0 (S^r - rP) \leq 1/r$$

$$S \leq \frac{1}{P} \leq \frac{b}{a}$$

$$\frac{r_0 b}{a} + \frac{r_0 \alpha + r_0 b}{a} \leq 1/r \Rightarrow r_0 b + r_0 \alpha \leq 1/r a$$

$$-r_0 b \leq r_0 \alpha$$

$$a \leq r_0 b$$

$$\frac{\sqrt{D}}{|a|} \leq \frac{\sqrt{r_0 b^2 - 4r_0 b^r}}{|a|} = \frac{\sqrt{r_0} |b|}{r_0 |b|} = \frac{\sqrt{r_0}}{r_0} = \frac{r_0 \sqrt{a}}{a}$$

$$x^r = (a + u)x + a \leq 0 \Rightarrow \begin{cases} x \neq 1 \\ x \leq a \end{cases} \Rightarrow x^r + x + r \leq 0 \Rightarrow (P_1 = r)$$

$$P_1 - P_1 = r_0 - r_0 = 0$$

$$\begin{aligned} x^r - (a + u)x + b &\leq 0 \Rightarrow x^r - 1 - ax + b \leq 0 \\ S \leq a + b \leq 1 &\Rightarrow \alpha \leq \beta + r \\ P_0 \leq \beta \leq b &\Rightarrow \alpha \leq \beta + r \end{aligned} \Rightarrow \begin{cases} \beta + r + \beta \leq 1 \\ \beta + r \leq 1 \\ \beta \leq r \end{cases} \Rightarrow \begin{cases} \alpha \leq \beta + r \\ \alpha \leq \beta \\ \alpha \leq r \end{cases}$$

$$x^r + x - 1 - m^r \leq 0$$

$$D \geq 0 \Rightarrow b^r - 4ac \geq 0 \Rightarrow 1 + 4r^2 m^r \geq 0 \Rightarrow r^2 m^r + 1 \geq 0$$

$$\alpha^r + \beta^r \leq S^r - rP \leq 1 + r^2 m^r + r = r^2 m^r + r \Rightarrow \alpha^r + \beta^r \leq r^2 m^r + r$$

$$A(x, y) \Rightarrow x \leq \frac{x_A + x_B}{2} \Rightarrow x \leq 1 \Rightarrow y \leq a(x+1) + 1 \Rightarrow y \leq ax^r + rx + a + 1$$

$$\alpha^r + \beta^r = S^r - rP \leq r - r \left(\frac{a+1}{a}\right) \leq 0 \Rightarrow r \left(\frac{a+1}{a}\right) \leq 1 \Rightarrow r(a+1) \leq a \Rightarrow a \leq \frac{r}{r}$$

$$S \leq r, P \leq \frac{a+1}{a}$$

$$y \leq \frac{1}{r}$$

$$\Rightarrow \text{حل برضای معادله}$$