

$$x_5 = \frac{b}{ra} = -1 \rightarrow b = -a \rightarrow \begin{cases} x = -1 \rightarrow a - b + c = 9 \rightarrow a - (-a) + c = 9 \rightarrow c - a = 9 \\ x = 3 \rightarrow 9a + 3b + c = 1 \rightarrow 9a + 9(-a) + c = 1 \rightarrow c - 9a = 1 \end{cases} \rightarrow \begin{cases} -19a = 8 \\ a = -\frac{8}{19} \end{cases}$$

$$\rightarrow b = 2x \cdot \frac{1}{p} = -1 \rightarrow c + \frac{1}{p} = 9 \rightarrow c = 9 - \frac{1}{p} \rightarrow y = ax^2 + bx + c \rightarrow y = -\frac{8}{19}x^2 - 2x + \frac{11}{19}$$

$$\rightarrow y = -\frac{8}{19}x^2 - 2x + \frac{11}{19}$$

دوربین مثبت دارد

$$\begin{aligned} \Delta > 0 &\rightarrow b^2 - 4ac > 0 \rightarrow m^2 - 1m - 4 > 0 \rightarrow (m+1)(m-4) > 0 \\ a > 0 &\rightarrow r > 0 \\ \alpha B > 0 &\rightarrow p > 0 \rightarrow \frac{c}{a} > 0 \rightarrow \frac{m+4}{r} > 0 \rightarrow \frac{-4}{-p+} \rightarrow m > -4 \\ \alpha + B > 0 &\rightarrow S > 0 \rightarrow \frac{-b}{a} > 0 \rightarrow \frac{-m}{r} > 0 \rightarrow \frac{0}{+p-} \rightarrow m < 0 \end{aligned}$$

$$\rightarrow -4 < m < 0$$

$$\alpha + B = \frac{1}{\alpha B} \rightarrow S = \frac{1}{p} \rightarrow \frac{b}{a} = \frac{1}{\frac{c}{a}} \rightarrow \frac{r-m-1}{r} = \frac{1}{\frac{r-m}{r}} \rightarrow \frac{1-r-m}{r} = \frac{r}{r-m}$$

$$\rightarrow r - rm - m + rm^2 = 9 \rightarrow rm^2 - (r+m)V = 0 \rightarrow \begin{cases} \text{جميع } a \text{ و } b \text{ برابر باشند} \\ \text{پس } a \text{ و } b \text{ از یک سمت باشند} \end{cases} \rightarrow \begin{cases} m = -1 \quad \times \\ m = \frac{c}{a} = \frac{1}{p} \quad \checkmark \end{cases}$$

دارای ریشه حقیقی است

$$\Delta > 0 \rightarrow b^2 - 4ac = 0 \rightarrow (r-1)^2 - 4(r \times \frac{1}{p}) = 9 - \frac{4r}{p} < 0 \rightarrow 0 < 0 \quad \times$$

$$m = \frac{1}{p} \rightarrow (r-1)^2 - 4(r \times \frac{1}{p}) = 9 - \frac{4r}{p} = 9 - \frac{4 \times 9}{19} = 9 - \frac{36}{19} = \frac{152-36}{19} = \frac{116}{19} > 0 \quad \checkmark$$

$$\rightarrow m = \frac{1}{p} \rightarrow m = \frac{1}{p}$$

$$x^2 - x - 4 = 0 \rightarrow S = -\frac{b}{a} = x_1 + x_2 = 1 \rightarrow \begin{cases} \alpha = x_1 + \frac{1}{x_1} \\ B = x_2 + \frac{1}{x_2} \end{cases}$$

باید مجموع و حاصل ضرب α و B را حساب کرده سپس ریشه t قرار دهیم.

$$S = \alpha + B = x_1 + \frac{1}{x_1} + x_2 + \frac{1}{x_2} = (x_1 + x_2) + (\frac{1}{x_1} + \frac{1}{x_2}) = S + \frac{x_1 + x_2}{x_1 x x_2} = 1 + \frac{1}{-4} = \frac{1}{4}$$

$$P = (x_1 + \frac{1}{x_1})(x_2 + \frac{1}{x_2}) = (x_1 x x_2) + x_1 + x_2 + \frac{1}{x_1 x x_2} = (-4) + S + \frac{1}{-4} = -4 + 1 - \frac{1}{4} = -\frac{13}{4}$$

$$x^2 - \frac{1}{4}t + \frac{13}{4} = 0 \rightarrow 4x^2 - \omega t - 13 = 0 \rightarrow 4x^2 - \omega t - 13 = 0$$

$$y = \sqrt{x} \rightarrow \sqrt{x^2} = y \rightarrow \frac{1}{\sqrt{x^2}} = \frac{1}{y} \rightarrow (y^2 + \frac{1}{y^2} + 1)(y^2 - 1) = 2y$$

$$\rightarrow y^4 + 1 + y^2 - y^2 - \frac{1}{y^2} - 1 = 2y \rightarrow y^4 - \frac{1}{y^2} = 2y \rightarrow y^6 - 1 = 2y^3 \rightarrow y^6 - 2y^3 - 1 = 0$$

$$\xrightarrow{y^3 = x} x^2 - 2x - 1 = 0 \rightarrow x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{2 \pm \sqrt{4 + 4}}{2} \rightarrow \begin{cases} x_1 = 1 + \sqrt{2} \\ x_2 = 1 - \sqrt{2} \end{cases}$$

$$\rightarrow x_1 + x_2 = 1 + \sqrt{2} + 1 - \sqrt{2} = 2 \rightarrow x_1 + x_2 = 2$$

$$\alpha = \frac{r}{B} \rightarrow \alpha B = r \Rightarrow B = \frac{r}{\alpha} \rightarrow B = \pm \frac{r}{\alpha}$$

$$\alpha + B = \frac{r}{\alpha} = \frac{-b}{a} = \frac{-(-a)}{1} = \frac{a}{1} \rightarrow \alpha = 1$$

$$\rightarrow a_r - a_l = 1 - (-1) = 2$$

$$\rightarrow a_r - a_l = 2$$

① $a > 0$ (I)
 ② $x = \frac{-(r+ra)}{a} > 0 \rightarrow -\frac{r+ra}{a} > 0 \rightarrow \frac{r+ra}{a} < 0 \xrightarrow{a>0} r+ra < 0 \rightarrow ra < -r \rightarrow a < \frac{-r}{r}$ (II)
 ① $\cap$ ② = $\emptyset$ (a, 1.50 $\notin$ $\mathbb{R}$)
 (a, 1.50 $\notin$ $\mathbb{R}$)

$x_5 = \frac{-b}{1a} = \frac{-a}{1}$, $x_5 = \frac{-b}{1a} = \frac{1}{-1} = -1$ $\xrightarrow{\text{چون معده مقاربتها مشترک است}} \frac{-a}{1} = -1 \rightarrow a = 1$
 $a=1 \rightarrow y = x^2 + 2x - 1$ $\xrightarrow{\text{نقطه اشتراک این سری}} x^2 + 2x - 1 = 1 \rightarrow x^2 + 2x - 2 = 0 \rightarrow (x+1)(x-1) = 0 \rightarrow \begin{cases} x = -1 \\ x = 1 \end{cases}$
 $\rightarrow B: (1, 0) \text{ و } A: (-1, 0)$ $\rightarrow 1 = -1 - 2 + b \rightarrow 1 = -1 - 2 + b \rightarrow b = 1 + 2 + 1 = 4$
 $\rightarrow b = 4$
 $\rightarrow \begin{cases} a = 1 \\ b = 4 \end{cases} \Rightarrow ab = 1 \times 4 = 4 \rightarrow ab = 4$

$$\alpha + \beta = \frac{-(1+a)}{r} = \frac{-a}{r}, \quad \alpha\beta = \frac{c}{a} = \frac{-r}{r} = -1, \quad \alpha + \omega\beta + \omega\alpha = \frac{a}{r} \Rightarrow \alpha + \beta + 1 = \frac{a}{r}$$

$$\Rightarrow \alpha + \beta = \frac{a}{r} - 1 = \frac{a-r}{r} = \frac{-a}{r} \Rightarrow a-r = -a \Rightarrow ra = r \Rightarrow a = 1 \Rightarrow \alpha + \beta = -\frac{1}{r} \Rightarrow \alpha\beta = -1$$

$$(\alpha + \omega)(\beta + \omega) = \omega/r + \omega\alpha + \omega\beta + \alpha\beta = \omega/r + \frac{1}{r}(\alpha + \beta) + \alpha\beta = \frac{b}{r}$$

$$\Rightarrow \omega/r - \omega/r + (-1) = \frac{b}{r} \Rightarrow \frac{b}{r} = -1 \Rightarrow b = -r$$

$$\Rightarrow \begin{bmatrix} a & b \\ r & r \end{bmatrix} = \begin{bmatrix} 1 & -r \\ r & r \end{bmatrix} = \begin{bmatrix} -r \\ r \end{bmatrix} = (-1)$$

$x^2 + 2x - 1m = x^2 + 9x + m \rightarrow -\varepsilon x = \varepsilon m \rightarrow x = -m$
 با فرض اینکه این دو معادله را
 به یکدیگر مساوی می‌کنیم.

$x = -m \rightarrow m^2 - 1m - 1m = 0 \rightarrow m^2 - 2m = 0 \rightarrow m(m - 2) = 0$
 $m = 0$ یا $m = 2$

$m = 0 \rightarrow \begin{cases} x^2 + 9x + m = 0 \rightarrow x^2 + 9x + 0 = 0 \rightarrow x(x + 9) = 0 \rightarrow x = -9 \\ x^2 + 2x - 1m = 0 \rightarrow x^2 + 2x - 0 = 0 \rightarrow x(x + 2) = 0 \rightarrow x = -2 \end{cases}$

$m = 2 \rightarrow \begin{cases} x^2 + 9x + m = 0 \rightarrow x^2 + 9x + 2 = 0 \rightarrow (x + 1)(x + 2) = 0 \rightarrow x = -1 \\ x^2 + 2x - 1m = 0 \rightarrow x^2 + 2x - 2 = 0 \rightarrow (x + 1)(x - 1) = 0 \rightarrow x = -1 \end{cases}$

در اینجا $x = -1$ و $x = -2$ و $x = -9$ و $x = -1$ را داریم.

اگر $x = -1$ و $x = -2$ را در معادله $x^2 + 9x + m = 0$ قرار دهیم:

$x = -1 \rightarrow 1 - 9 + m = 0 \rightarrow m = 8$
 $x = -2 \rightarrow 4 - 18 + m = 0 \rightarrow m = 14$

اگر $x = -9$ و $x = -1$ را در معادله $x^2 + 2x - 1m = 0$ قرار دهیم:

$x = -9 \rightarrow 81 - 18 - m = 0 \rightarrow m = 63$
 $x = -1 \rightarrow 1 - 2 - m = 0 \rightarrow m = -1$

بنابراین جواب‌های این معادله‌ها عبارتند از:

$m = 8, m = 14, m = 63, m = -1$