

$$\begin{aligned} x^2 - 5x + 2 &= 0 \quad \begin{cases} \alpha^2 = 5\alpha - 2 \\ \beta^2 = 5\beta - 2 \end{cases} \quad \begin{aligned} \epsilon\alpha &= \epsilon(5\alpha - 2) = 20 - 2\epsilon\beta \\ \beta^2 - \beta(\beta^2) &= \beta(5\beta - 2) = 5\beta^2 - 2\beta = 25\beta - 10 \end{aligned} \\ \alpha + \beta &= 5 \\ \alpha\beta &= 2 \rightarrow \alpha = \frac{5}{\beta} \quad \epsilon\alpha = \frac{4}{\beta} \\ \beta^2 &= \beta(\beta^2) = \beta((5\beta - 2)^2) = \beta(25\beta^2 - 20\beta + 4) = 25\beta^3 - 20\beta^2 + 4\beta = \\ &= \frac{25(25\beta - 10) - 20(5\beta - 2) + 4\beta}{5\beta^2} = \frac{625\beta - 250 - 100\beta + 40 + 4\beta}{5\beta^2} = \frac{529\beta - 210}{5\beta^2} = 9 \end{aligned}$$

$$\begin{aligned} \begin{pmatrix} 2 & -5 \\ -1 & 5 \end{pmatrix} \quad \frac{2 + (-5)}{2} = -1.5 \quad \alpha_5 = -1.5 \quad \text{میانگین} \\ \frac{\alpha_1 + \beta_1}{2} = 0.5 \Rightarrow \alpha + \beta = 1, 5 \\ \text{تفاوت همگونی هستند پس } \alpha_5 \text{ با طول رأس سیمی برابر میانگین طول فاصله است:} \end{aligned}$$

$$\begin{aligned} x^2 + 2x + 4 &= 0 \quad \begin{cases} a = 1 \\ b = 2 \\ c = 4 \end{cases} \quad |a - \beta| = \frac{\sqrt{\Delta}}{|a|} = \frac{\epsilon}{2} \rightarrow \sqrt{\epsilon x^2 - 20} = \frac{\epsilon}{2} x \\ \epsilon x^2 - 20 &= \frac{19}{9} x^2 \\ \frac{20}{9} x^2 = 20 \rightarrow x^2 = 9 \rightarrow x = 3 \\ &\rightarrow x = -3 \quad \text{عقود} \\ \left[\frac{x^2}{2} \right] &= \left[\frac{1}{2} \right] = \left[\frac{1}{2}, 0 \right] = 2 \end{aligned}$$

$$\begin{aligned} A(2, 4) \quad B(-5, y) \quad \text{هم‌خطی} \quad x_5 = \frac{2 + (-5)}{2} = -1.5 \quad y_5 = 1 \quad \begin{cases} 0 \leq \beta^2 = 5 \\ (\alpha + \beta) - 2\alpha\beta = 5 \\ 2\alpha\beta = -1 \end{cases} \\ y = a(n-h)^2 + k \rightarrow y = a(x+1)^2 + 1 \\ y = 0 \rightarrow 0 = a(n+1)^2 \rightarrow a(n+1)^2 = -1 \rightarrow (n+1)^2 = -\frac{1}{a} \rightarrow \begin{cases} \alpha = -1 + \sqrt{-\frac{1}{a}} \\ \beta = -1 - \sqrt{-\frac{1}{a}} \end{cases} \\ x_0 \rightarrow y = a(0+1)^2 + 1 \rightarrow \frac{a}{2} + 1 = \frac{1}{2} \quad \begin{cases} \alpha + \beta = -2 \\ \alpha\beta = 1 + \frac{1}{a} = -\frac{1}{2} \end{cases} \quad \frac{1}{a} + \frac{2}{2} = a = -\frac{2}{3} \end{aligned}$$

$$\begin{aligned} x &= \frac{-b \pm \sqrt{\Delta}}{2a} \rightarrow \frac{-5 \pm \sqrt{25 + 4m}}{-2} < \frac{9}{2} \rightarrow \pm \sqrt{25 + 4m} < 14 \\ 0 &\leq 25 + 4m < 19 \rightarrow -25 \leq 4m < -9 \rightarrow -6.25 \leq m < -2.25 \end{aligned}$$

$$m \in \{-9, -5, -4, -2\} \leftarrow m \text{ مقدار صحیح}$$

$$y = m x^2 - (a+m)x + 1 \rightarrow x_s = -\frac{b}{a} = \frac{1r}{1m} = \frac{1}{m}$$

$$y_{min} = 1 \rightarrow y_{min} = a\left(\frac{-b}{1a}\right)^2 + b\left(\frac{-b}{1a}\right) + c \rightarrow y_{min} = m\left(\frac{1}{m}\right)^2 - 1r\frac{1}{m} + 1$$

$$x_s = 1 \leftarrow m = 1$$

$$x_s = -\frac{a}{1} \leftarrow m = -\frac{1r}{a}$$

$$y_{min} = -\frac{r^2}{m} + 1$$

$$\frac{y_{min}}{m} = -\frac{r^2}{m^2} + \frac{1}{m} = 0$$

$$-\frac{r^2}{m} + 1 = 0 \rightarrow -r^2 + m = 0 \rightarrow m = r^2$$

$$x^2 + (a+1)x + (a-1) = 0$$

$$\alpha\beta = \frac{c}{a} = \frac{a-1}{a+1} \rightarrow (a-1) \cdot a = (a+1) \cdot a^2 \rightarrow a^2 - ra + 1 = 0 \Rightarrow (a-1)^2 = 0 \rightarrow a = 1$$

$$x^2 + (1+1)x + (1-1) = 0 \rightarrow x^2 + 2x = 0 \rightarrow x = -2 \pm \sqrt{4} = -2 \pm 2$$

$$x^2 - vx - a = 0 \rightarrow x^2 - vx - a = 0 \rightarrow x = \frac{v \pm \sqrt{v^2 + 4a}}{2}$$

$$x = \frac{v + \sqrt{v^2 + 4a}}{2}$$

$$u = \frac{v + \sqrt{v^2 + 4a}}{2} \rightarrow s = 0$$

$$\rho = \sqrt{t} \cdot (-\sqrt{t}) = -t \rightarrow -t = \frac{-v - \sqrt{v^2 + 4a}}{2} \Rightarrow \rho = \frac{v + \sqrt{v^2 + 4a}}{2}$$

$$2\rho^2 - 3sp + 2s = 2\rho^2 = x \left(\frac{49 + 14\sqrt{49} + 49}{4} \right) = 118 + 14\sqrt{49} = 118 + 98 = 216$$

$$y = kx^2 - 4x - 7 \rightarrow y = -4x - 7$$

$$y_s = k\left(\frac{1}{k}\right)^2 - 4\left(\frac{1}{k}\right) - 7 = \frac{1}{k} - \frac{4}{k} - 7 = -\frac{3}{k} - 7$$

$$y_s = -4x - 7 = -4\left(\frac{1}{k}\right) - 7 = -\frac{4}{k} - 7 \rightarrow -\frac{4}{k} - 7 = -\frac{3}{k} - 7 \rightarrow -\frac{4}{k} = -\frac{3}{k} \rightarrow -4 = -3 \rightarrow k = 1$$

$$y_s = -\frac{3}{k} - 7 = -\frac{3}{1} - 7 = -10$$

$$m x^2 + m x + 1 = -m - 4$$

$$-m x^2 - m x + m + 4 = 0 \rightarrow -m x^2 + (m+1)x - m + 4 = 0$$

$$(m+1)^2 + 4m(m+1) < 0 \rightarrow (m+1)(5m+1) < 0$$

$$m^2 + 2m + 1 + 4m^2 + 4m = 5m^2 + 6m + 1 < 0$$

$$-1 < m < -\frac{1}{5}$$

$$m \in \left(-1, -\frac{1}{5}\right)$$