

$$S(h, k) \rightarrow y = a(n-h)^2 + k \xrightarrow{A(-1, 9)}$$

$$y = a(n - (-1))^2 + 9 \rightarrow y = a(n+1)^2 + 9$$

$$\xrightarrow{B(3, 1)} 1 = a(3+1)^2 + 9$$

$$1 = 16a + 9 \rightarrow a = -\frac{1}{4}$$

$$\textcircled{2} \quad y = -\frac{1}{4}(n+1)^2 + 9$$

$$\Rightarrow y = -\frac{1}{4}n^2 - n + \frac{17}{4}$$

$$\frac{2m^2 + mn + m + 4}{a} = 0 \rightarrow \text{دارای آریستری مثبت}$$

$$\Delta > 0 \rightarrow m^2 - 4(2)(m+4) > 0 \rightarrow (m-12)(m+4) > 0 \rightarrow m < -4 \text{ یا } m > 12$$

$$S > 0 \rightarrow -\frac{b}{a} > 0 \rightarrow -\frac{m}{2} > 0 \rightarrow m < 0$$

$$P > 0 \rightarrow \frac{c}{a} > 0 \rightarrow \frac{m+4}{2} > 0 \rightarrow m > -4$$

$$\textcircled{2} \quad -4 < m < -2$$

$$P = \frac{2-m}{2}$$

$$S = -\frac{2m-1}{2} = \frac{1-2m}{2}$$

$$\Delta > 0 \rightarrow m = \frac{1}{2} \rightarrow \Delta > 0 \checkmark$$

$$m = -1 \rightarrow \Delta < 0 \times$$

$$\alpha + \beta = \frac{1}{\alpha\beta}$$

$$S = \frac{1}{P}$$

$$\frac{1-2m}{2} = \frac{2}{2-m}$$

$$\Delta = 2m^2 - 2m + 1$$

$$+ 12m - 24 = 2m^2 + 10m - 23$$

$$(2-m)(1-2m) = 9$$

$$2m^2 - 4m + 2 = 9$$

$$2m^2 - 4m - 7 = 0$$

$$(2m-7)(m+1) = 0$$

$$m = -1 \text{ یا } m = \frac{7}{2}$$

$$n = n^2 - 1 \rightarrow n^2 - n - 1 = 0$$

$$n_1 + n_2 = 1 \quad n^2 = n + 1$$

$$n_1 \cdot n_2 = -1$$

$$y_1 = n_1^2 + \frac{1}{n_1} \rightarrow n_1^2 = \Delta n_1 + 1$$

$$y_1 = \Delta n_1 + 1 + \frac{1}{n_1}$$

$$y_2 = n_2^2 + \frac{1}{n_2} \rightarrow n_2^2 = \Delta n_2 + 1$$

$$y_2 = \Delta n_2 + 1 + \frac{1}{n_2}$$

$$y_1 + y_2 = \Delta(n_1 + n_2) + \frac{1}{n_1} + \frac{1}{n_2} + 2$$

$$y_1 + y_2 = \Delta + 1 + \frac{1}{n_1} + \frac{1}{n_2} = \frac{\Delta}{2}$$

$$y_1 \cdot y_2 = (n_1^2 + \frac{1}{n_1})(n_2^2 + \frac{1}{n_2}) = n_1^2 n_2^2 + \frac{n_1^2}{n_2} + \frac{n_2^2}{n_1} + \frac{1}{n_1 n_2}$$

$$y_1 \cdot y_2 = (n_1^2 + \frac{1}{n_1})(n_2^2 + \frac{1}{n_2}) = n_1^2 n_2^2 + \frac{n_1^2}{n_2} + \frac{n_2^2}{n_1} + \frac{1}{n_1 n_2}$$

$$t = \sqrt[3]{n}$$

$$(t^2 + \frac{1}{t^2} + 1)(t^2 - 1) = t^2 - \frac{1}{t^2} \rightarrow t^2 - \frac{1}{t^2} = 2t$$

$$S = -\frac{2}{t} = \textcircled{2}$$

$$t^4 - 2t^2 - 1 = 0$$

$$t^4 - 1 = 2t^2 \rightarrow x + t^2$$

$$3n^2 - an + 2 = 0 \rightarrow \text{یک ریشه ۳ برابر ریشه دیگر} \rightarrow \alpha = 3\beta \rightarrow \alpha + \beta = \frac{a}{3}$$

$$\alpha + \beta = \frac{a}{3} \leftarrow \alpha = 2 \leftarrow \beta = \frac{2}{3} \quad \alpha\beta = \frac{2}{3}$$

$$\alpha + \beta = -\frac{1}{3} \leftarrow \alpha = -2 \leftarrow \beta = -\frac{2}{3} \quad \beta^2 = \frac{4}{9}$$

$$a_1 = 1 \quad a_2 = -1 \rightarrow \text{افتلا: } (14) \quad \alpha = 3(\alpha + \beta) = \pm 1$$

برای آن مقدار a که $y = an^2 + (3+2a)n$ از این ۳ گذرد

$a > 0$ / $\alpha, \beta > 0$ / $\alpha\beta = \frac{2}{3}$ / $\alpha + \beta = \frac{a}{3}$

$a < 0$ / $\alpha, \beta < 0$ / $\alpha\beta = \frac{2}{3}$ / $\alpha + \beta = -\frac{1}{3}$

$a = 0$ / $\alpha = 0$ / $\beta = 0$ / $\alpha\beta = 0$ / $\alpha + \beta = 0$

$a = 1$ / $\alpha = 1$ / $\beta = 1$ / $\alpha\beta = 1$ / $\alpha + \beta = 2$

$a = -1$ / $\alpha = -1$ / $\beta = -1$ / $\alpha\beta = 1$ / $\alpha + \beta = -2$

مورد تقارن $y_1 = n^2 + an - 2$ / $y_2 = -n^2 - 2n + b$

$n_1 = -\frac{a}{2}$ / $n_2 = -\frac{-2}{2} = -1$

$n_1 = n_2 \rightarrow -\frac{a}{2} = -1 \rightarrow a = 2$

$y = n^2 + an - 2 \rightarrow y = 1 \rightarrow n^2 + 2n - 2 = 1$

$n^2 + 2n - 3 = 0$ / $(n+3)(n-1) = 0$ / $n = -3$ / $n = 1$

$y = -n^2 - 2n + b \rightarrow 1 = -(1)^2 - 2(1) + b \rightarrow b = 4$

$ab = 2 \times 4 = 8$

$3n^2 - an + b = 0 \rightarrow \alpha + \beta = \frac{a}{3}$ / $\alpha\beta = \frac{b}{3}$

$2an^2 + an - 4 = 0 \rightarrow \alpha + \beta = \frac{a}{2}$ / $\alpha\beta = \frac{-4}{2} = -2$

$\alpha + \frac{1}{\alpha} = \frac{a}{2} + 1 \rightarrow \frac{\alpha}{\alpha} = \frac{-\alpha}{2\alpha} + 1 = \frac{1}{2} \rightarrow \alpha = 1$

$\beta = -2$

$\alpha + \frac{1}{\alpha} = \frac{a}{2} + 1 \rightarrow 1 + 1 = \frac{a}{2} + 1 \rightarrow a = 2$

$\alpha\beta = \frac{b}{3} \rightarrow 1 \times (-2) = \frac{b}{3} \rightarrow b = -6$

$\left[\frac{ab}{3}\right] = \left[\frac{1 \times (-6)}{3}\right] = [-2]$

$y_1 = n^2 + 4n + m = 0$ / $y_2 = n^2 + 2n - 3m = 0$

$n^2 + 4n + m = n^2 + 2n - 3m$

$2n + 4m = 0 \rightarrow n = -2m$

$(-2m)^2 + 4(-2m) + m = 0 \rightarrow 4m^2 - 8m + m = 0 \rightarrow 4m^2 - 7m = 0$

$m(4m - 7) = 0 \rightarrow m = 0$ / $m = \frac{7}{4}$

$n = -2m = 0$ / $n = -\frac{7}{2}$

$y_1 = n^2 + 4n + m = 0 \rightarrow n = -1$ / $n = -5$

$y_2 = n^2 + 2n - 3m = 0 \rightarrow n = -1$ / $n = -5$

$n = 3$