

$$\frac{-b}{2a} = 2 \Rightarrow \frac{-1}{2a-2} = 2 \rightarrow 2a - \varepsilon = -1$$

$$\varepsilon a = 3$$

$$a = \frac{3}{\varepsilon}$$

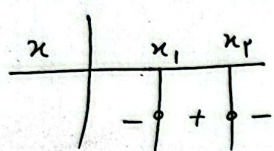
$$-\frac{1}{\varepsilon} x^2 + n + 3 = 0$$

$$x^2 - \varepsilon n - 12 = 0$$

$$(x-4)(x+2) = 0$$

$$x = \boxed{4} - 2 \rightarrow x = 4 = \text{طرح مثبت}$$

۱



به ترتیب جدول

$$y: mx^2 - \omega n + m$$

$$\rightarrow m < 0 \quad \Delta > 0 \rightarrow 4\omega - 4m^2 > 0 \rightarrow 4m^2 < 4\omega \rightarrow m^2 < \omega \rightarrow m < \sqrt{\omega}$$

$$\boxed{-\frac{\omega}{r} < m < 0} \quad \text{و نیز} \quad -\frac{\omega}{r} < m < \frac{\omega}{r} \quad \text{②}$$

۲

$$x^2 - 5x + 6 = 0$$

$$S = \frac{3+\sqrt{5}}{2} + \frac{3-\sqrt{5}}{2} = \frac{6}{2} = 3$$

$$\rightarrow y = x^2 - 2x + \frac{\varepsilon}{9} \rightarrow y = 9x^2 - 18x + \varepsilon$$

$$P = \frac{3+\sqrt{5}}{2} \times \frac{3-\sqrt{5}}{2} = \frac{9-5}{4} = \frac{4}{4} = 1$$

۳

$$\alpha + \beta = \frac{1}{r} = \varepsilon, \beta = \varepsilon - \alpha$$

$$3\alpha^2 + (\varepsilon - \alpha)^2 = 12$$

$$\alpha = 1 \rightarrow 2 - 1 + m + 1 = 0$$

$$m = -2$$

$$3\alpha^2 + 14 + \alpha^2 - 18\alpha = 12$$

$$4\alpha^2 - 18\alpha + \varepsilon = 0$$

$$\alpha^2 - 2\alpha + 1 = 0 \rightarrow \alpha = 1$$

۴

$$y = a(x-2)^2 + 9 \xrightarrow{x=0} 4a + 9 = 5$$

$$a = -1 \rightarrow -(x-2)^2 + 9 > 0$$

$$(x-2)^2 - 9 < 0$$

$$(x-2)^2 < 9$$

$$-3 < x-2 < 3 \rightarrow \boxed{-1 < x < 5} \quad x \in (-1, 5)$$

۵

$$\frac{1}{\alpha} + \frac{1}{\beta} = \frac{\alpha + \beta}{\alpha\beta} \Rightarrow \alpha\beta = \frac{9\beta}{\alpha} \Rightarrow \alpha^2 = 9, \alpha = \pm 3, \alpha + \beta = \frac{V}{\alpha}$$

$$\begin{aligned} \alpha = 3 &\rightarrow 3 + \beta = \frac{V}{3} \leadsto \beta = -\frac{V}{3}, \alpha = 3 \\ \alpha = -3 &\rightarrow -3 + \beta = \frac{V}{-3} \leadsto \beta = \frac{V}{3}, \alpha = -3 \end{aligned} \left. \vphantom{\begin{aligned} \alpha = 3 \\ \alpha = -3 \end{aligned}} \right\} \beta > 0 \leadsto \beta = \frac{V}{3}, \alpha = -3$$

$$\frac{\alpha + \beta}{\alpha\beta} = \frac{-\frac{V}{3}}{-3} = +\frac{V}{9}$$

6

$$\begin{aligned} \alpha^2 - m\beta &= 1 \\ \gamma m - m\alpha - m\beta &= 1 \\ \gamma m - m(\alpha + \beta) &= 1 \\ -m &= 1 \end{aligned}$$

$$\begin{aligned} \alpha^2 + m\alpha - \gamma m &= 0 \\ \alpha^2 &= -m\alpha + \gamma m \end{aligned}$$

$$\begin{aligned} \gamma m + m^2 - 1 &= 0 \\ (m+1)(m-1) &= 0 \rightarrow m = \begin{cases} -1 \\ 1 \end{cases} \end{aligned}$$

$$m = 1 \rightarrow \Delta < 0 \text{ غير ممكن}$$

$$m = -1 \rightarrow x^2 + \gamma m - \frac{\alpha + \beta}{\alpha} = \frac{-b}{a} = -2$$

7

$$\begin{aligned} m &< 0 \\ \frac{-\Delta}{4a} &= 1 \\ -\Delta &= 4a \\ -(14 - \varepsilon(m)(\frac{m}{r} + V)) &= 4\gamma m \\ -14 + \gamma m^2 + \gamma \Delta m &= 4\gamma m \\ \gamma m^2 - \varepsilon m - 14 &= 0 \rightarrow m^2 - \gamma m - 1 = 0 \rightarrow (m-1)(m+1) = 0 \rightarrow m = -1, 1 \end{aligned}$$

$$\begin{aligned} -\gamma n^2 + \varepsilon m + 4 &= 0 \\ \gamma n^2 - \gamma n - 2 &= 0 \\ (\gamma n - 2)(n+1) &= 0 \\ \gamma n = 2, \cancel{n+1} &\rightarrow k = 2 \end{aligned}$$

8

$$\begin{aligned} y &= an^2 + bn + \frac{f}{\gamma} \\ \frac{-b}{2a} &= 1 \leadsto b = -2a \end{aligned}$$

$$\rightarrow y = an^2 - 2an + \frac{f}{\gamma} \xrightarrow{x=2} y = 4a - 4a + \frac{f}{\gamma} \rightarrow a = -\frac{1}{\gamma}, b = 2$$

9

$$\Rightarrow y = -\frac{1}{\gamma}x + 2n + \frac{f}{\gamma} \Rightarrow \frac{1}{\alpha} + \frac{1}{\beta} = \frac{\alpha + \beta}{\alpha\beta} \leadsto \frac{f}{-1} = -\frac{1}{\gamma}$$

$$\alpha + \beta = f, \alpha\beta = -1$$

$$x = 2 \Rightarrow f - 1a - 1 + \gamma a^2 + 4a + 2 = 0 \rightarrow \gamma a^2 - \gamma a - 1 = 0 \rightarrow a = 1, a = -\frac{1}{\gamma}$$

$$a = 1 \rightarrow \alpha^2 - 1n + 2 = 0 \rightarrow (n-2)(n+4) = 0 \rightarrow n = 2, -4$$

$$\rightarrow x = 4, \frac{f}{\gamma}$$

10

$$a = -\frac{1}{\gamma} \rightarrow x^2 - \frac{1}{\gamma}n + \frac{f}{\gamma} = 0 \rightarrow \gamma n^2 - 1n + f = 0 \rightarrow n = \frac{1}{\gamma}, \frac{f}{\gamma}$$