

سری احسنی

$$y = -x^2 + bx + 3$$

-1

$$\frac{-\Delta}{2a} = V \rightarrow \frac{-b^2 + 4(-1)(3)}{-4} \rightarrow \frac{-b^2 - 12}{-4} = V \rightarrow -b^2 - 12 = -24 \rightarrow$$

$$-b^2 = -12 \rightarrow b^2 = 12 \rightarrow b = \pm 2\sqrt{3}$$

-2

الف) $f(x) = x^2 + 2x + 3$ $\frac{a^2}{t} = t$, $t^2 + 2t + 3 = 0 \rightarrow \Delta < 0$ ریشه ندارد

ب) $f(x) = (x - a)^2 - 2(x - a) - 1$ $\frac{a - a^2}{t} = t$, $t^2 - 2t - 1 = 0$ $\int_{t=0}^{t=3}$

$$x - a^2 = 1 \rightarrow -a^2 = 1 \rightarrow a^2 = -1$$

$$x - a^2 = -3 \rightarrow -a^2 = -3 \rightarrow a^2 = 3 \rightarrow a = \pm\sqrt{3}$$

-3

$$\alpha, \alpha + 2 \quad 4m^2 - 14m + m = 0$$

$$P = \frac{c}{a} = \frac{m}{4} = \alpha(\alpha + 2) = \alpha^2 + 2\alpha \xrightarrow{\alpha=1} \frac{m}{4} = 3 \rightarrow m = 12$$

$$S = \frac{-b}{a} = \frac{14}{4} = 3.5 = \alpha + \alpha + 2 = 2\alpha + 2 \rightarrow 2 = 2\alpha \rightarrow \alpha = 1$$

15

-4

$$3m^2 - 4m + m - 1 = 0 \quad 2\alpha - \beta = 5$$

$$\beta + \alpha = \frac{-b}{a} = \frac{4}{3} = 2 \rightarrow \alpha + \beta = 2 \rightarrow \beta = 2 - \alpha$$

$$\alpha\beta = \frac{c}{a} = \frac{m-1}{3}$$

$$2\alpha - \beta = 5 \xrightarrow{\beta=2-\alpha} 2\alpha - (2-\alpha) = 5 \rightarrow 2\alpha - 2 + \alpha = 5 \rightarrow 3\alpha - 2 = 5 \rightarrow$$

$$3\alpha = 7 \rightarrow \alpha = \frac{7}{3}, \beta = 2 - \alpha \xrightarrow{\alpha=\frac{7}{3}} \beta = 0$$

$$\alpha\beta = \frac{m-1}{3} = 2 \times 0 = 0 \rightarrow m-1 = 0 \rightarrow m = 1$$

Arman

نکته

$$-m^2 + 5m + m^2 - 2 = 0 \quad \frac{1}{\alpha}, \alpha \quad - \omega$$

$$P = \frac{1}{\alpha} \times \alpha = 1 \rightarrow 1 = \frac{m^2 - 2}{-m} \rightarrow -m = m^2 - 2 \rightarrow m^2 + m - 2 = 0 \quad \begin{matrix} m=1 \\ m=-2 \end{matrix}$$

$$S = \frac{1}{\alpha} + \alpha = \frac{1 + \alpha^2}{\alpha} = \frac{-5}{-2}$$

5

$$\frac{m = -2}{\alpha} \rightarrow \frac{1 + \alpha^2}{\alpha} = \frac{-5}{-2} \rightarrow -2\alpha = 1 + \alpha^2 \rightarrow \alpha^2 + 2\alpha + 1 = 0 \rightarrow (\alpha + 1)^2 = 0$$

$$\alpha = -1 \quad \text{غیر صحیح} \quad \Delta$$

$$\frac{m = 1}{\alpha} \rightarrow \frac{1 + \alpha^2}{\alpha} = \frac{-5}{-1} \rightarrow 5\alpha = 1 + \alpha^2 \rightarrow \alpha^2 - 5\alpha + 1 = 0$$

$$\Delta = 14 - 4(1)(1) = 12$$

$$\alpha = \frac{5 + \sqrt{12}}{2}, \frac{5 - \sqrt{12}}{2} = \alpha \rightarrow \frac{5 + 2\sqrt{3}}{2} = 2 + \sqrt{3} = \alpha \quad \frac{5 - 2\sqrt{3}}{2} = 2 - \sqrt{3} = \alpha$$

-4

$$x^2 - mx + p = 0$$

$$\alpha\beta = p$$

$$\alpha + \beta = \frac{-b}{a} = m$$

$$\alpha\beta = \frac{c}{a} = p \rightarrow \frac{\alpha\beta}{\alpha} = \frac{p}{\alpha} \rightarrow \beta = \frac{p}{\alpha}$$

$$\alpha\beta = p, \beta = \frac{p}{\alpha} \rightarrow \frac{p}{\alpha} \times \alpha = p \rightarrow \alpha = \frac{p}{m}$$

$$m = \frac{9}{5} + \frac{5}{5} = \frac{14}{5} + \frac{14}{5} = \frac{28}{5}$$

20

Arman

$$2x^2 - 5x + m = 0 \quad \alpha, \beta$$

- V

$$\alpha + \beta = -\frac{b}{a} = 5 \quad \beta = 3\alpha \rightarrow 4\alpha = 5 \rightarrow \alpha = 1$$

$$\alpha\beta = \frac{c}{a} = m \rightarrow 1 \times \beta = m \quad \frac{\beta = 3\alpha}{3\alpha = 3} \rightarrow 1 \times 3 = 3 \rightarrow m = 3$$

- A

$$2x^2 - 5x + 3$$

$$\alpha^2 + \frac{1}{\alpha^2}$$

$$\alpha + \beta = 5$$

$$\alpha\beta = 3 \rightarrow \beta = \frac{3}{\alpha}$$

$$\frac{3}{\alpha} + \alpha = \alpha + \beta = 5$$

$$\left(\frac{3}{\alpha} + \alpha\right)^2 = \alpha^2 + \frac{1}{\alpha^2} + 6\alpha \cdot \frac{3}{\alpha} \left(\alpha + \frac{3}{\alpha}\right)$$

$$\left(\alpha + \frac{3}{\alpha}\right)^2 = \alpha^2 + \frac{1}{\alpha^2} + \frac{6\alpha}{\alpha} \left(\alpha + \frac{3}{\alpha}\right) \quad \alpha + \frac{3}{\alpha} = 5$$

$$5^2 = \alpha^2 + \frac{1}{\alpha^2} + 6 \times 5 \rightarrow 25 = \alpha^2 + \frac{1}{\alpha^2} + 30 \rightarrow$$

$$\alpha^2 + \frac{1}{\alpha^2} = 5$$

15

- 9

$$h(t) = -10t^2 + 50t \quad t_{max} = -\frac{b}{2a} = -\frac{50}{-20} = 2.5 \text{ ثانیه}$$

$$h_{max} = -10(2.5)^2 + 50(2.5) = -10(6.25) + 125 = -62.5 + 125 = 62.5$$

20 62.5 متر

$$h(t) = 0 \rightarrow -10t^2 + 50t = 0 \rightarrow t(-10t + 50) = 0$$

$$t=0 \rightarrow \text{نقطه شروع} \quad t=5 \rightarrow \text{نقطه پایان}$$

Arman

$$\text{الف) } (n-1)^2 = 2n+1$$

$$n \geq 1$$

$$y \geq 0$$

$$\begin{array}{c|c} n & 0 \\ \hline y & 1 \end{array}$$

$$n^2 - 2n + 1 = 2n + 1$$

$$n^2 - 4n = 0$$

$$n(n-4) = 0$$

$$n \text{ های برقرار} \Rightarrow 0, 4 \rightarrow n=0 \rightarrow y=1, n=4 \rightarrow y=9$$

$$y \text{ های برقرار} \Rightarrow 1, 9$$

$$0^2 - 2(0) + 1$$

$$4^2 - 2(4) + 1$$

$$\text{ب) } n^2 + 2n = |n+2|$$

$$y = n^2 + 2n \rightarrow n \geq \frac{-b}{2a} = \frac{-2}{2} = -1$$

$$y \geq -1$$

$$\begin{array}{c|c} n & -2-1 \\ \hline y & 0-1 \end{array}$$

$$n \text{ های برقرار} \Rightarrow -2, 0 \rightarrow n=1 \rightarrow y=3, n=-2 \rightarrow y=0$$

$$y \text{ های برقرار} \Rightarrow 0, 3$$

