

$$y = ax^2 + bx + c \xrightarrow{\text{نقطه داده شده}} (-1, 9) \text{ و } (3, 1) \\ (h, k) \rightarrow y = a(x-h)^2 + k \rightarrow h = -1, k = 9 \rightarrow y = a(x+1)^2 + 9 \quad (1) \\ 1 = a(3+1)^2 + 9 \rightarrow -8 = 16a \rightarrow a = -\frac{1}{2} \rightarrow y = -\frac{1}{2}(x+1)^2 + 9 \\ \rightarrow -\frac{1}{2}x^2 - x + \frac{17}{2} \xrightarrow{\text{مکمل}} y = -\frac{1}{2}x^2 - x + \frac{17}{2} \rightarrow \text{جواب}$$

$$x^2 + mx + m + 4 = 0 \xrightarrow{+ \frac{m}{2}} \frac{-b}{a} > 0 \rightarrow \frac{-m}{1} > 0 \rightarrow m < 0 \\ \xrightarrow{+ \frac{m}{2}} \frac{c}{a} > 0 \rightarrow \frac{m+4}{1} > 0 \rightarrow m > -4 \\ \Delta > 0 \rightarrow m^2 - 4(m+4) = m^2 - 4m - 16 > 0 \rightarrow (m-12)(m+4) > 0 \\ \text{باز: } -4 < m < -\epsilon \rightarrow \text{جواب}$$

$$x^2 + (2m-1)x + 2 - m = 0 \quad \frac{-a}{b} = \frac{c}{a} \rightarrow \frac{-2}{2m-1} = \frac{2-m}{2} \rightarrow -4 = (2m-1)(2-m) \\ -4 = (4m - 2m^2 - 2 + m) \rightarrow -4 = -2m^2 + 5m - 2 \rightarrow m^2 + 2m - 1 = 0 \\ \rightarrow (m+2)(m-1) \rightarrow m = \frac{1}{2} \checkmark \\ m = -1 \times \} \rightarrow m = \frac{1}{2} \rightarrow \text{جواب}$$

$$x = x^2 - \epsilon \rightarrow x^2 - x - \epsilon = 0 \rightarrow S = \frac{-b}{a} = \frac{1}{1} = 1, P = \frac{c}{a} = -\epsilon \\ S = x_1^2 + x_2^2 + \frac{1}{x_1} + \frac{1}{x_2} = (S^2 - 2PS) + \frac{x_1^2 + x_2^2}{x_1 x_2} \Rightarrow S = 1 - 2 \times 1 \times (-\epsilon) + \frac{1}{-\epsilon} = 1 + 2\epsilon - \frac{1}{\epsilon} \\ = \frac{1}{\epsilon} + 2\epsilon \quad P = (x_1^2 x_2^2) + \frac{1}{x_1 x_2} + x_1^2 + x_2^2 = -4\epsilon - \frac{1}{\epsilon} + 9 \rightarrow -2\epsilon - \frac{1}{\epsilon} = \frac{-2\epsilon^2 - 1}{\epsilon} \\ S = \frac{1}{\epsilon} + 2\epsilon, P = \frac{-2\epsilon^2 - 1}{\epsilon} \Rightarrow x^2 - Sx + P = 0 \rightarrow x^2 - \frac{1}{\epsilon}x - \frac{2\epsilon^2 - 1}{\epsilon} = 0 \xrightarrow{\text{مکمل}} \\ \epsilon x^2 - x - 2\epsilon^2 + 1 = 0 \rightarrow \text{جواب}$$

$$(\sqrt{x} + \frac{1}{\sqrt{x}} + 1)(\sqrt{x} - 1) = 2\sqrt{x} \Rightarrow \sqrt{x} = t \rightarrow x = t^2 \\ (t^2 + \frac{1}{t} + 1)(t - 1) = 2t \rightarrow \frac{(t^2 + t + 1)(t - 1)}{t} = 2t \\ t^3 - 2t^2 - 1 = 0 \xrightarrow{2 \cdot t} x^2 - 2x - 1 = 0 \xrightarrow{S} x_1 + x_2 = \frac{-b}{a} = 2 \rightarrow \text{جواب}$$

$$x^2 - ax + \varepsilon = 0 \xrightarrow{\text{ریشه ها}} \alpha, \beta$$

$$S = \frac{a}{\mu} = \varepsilon \alpha$$

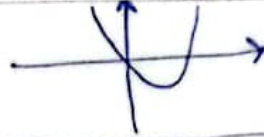
$$P = \alpha \times \mu \alpha = \mu \alpha^2 = \frac{\varepsilon}{\mu} \rightarrow \alpha^2 = \frac{\varepsilon}{\mu} \rightarrow \alpha = \pm \frac{\sqrt{\mu}}{\mu}$$

$$\left. \begin{aligned} S = \varepsilon \alpha = \frac{a}{\mu} \rightarrow \varepsilon \times \frac{\sqrt{\mu}}{\mu} = \frac{1}{\mu} = \frac{a}{\mu} \rightarrow a = 1 \\ \varepsilon \alpha = \frac{1}{\mu} = \frac{a}{\mu} \rightarrow a = -1 \end{aligned} \right\} \rightarrow 1 - (-1) = 2 \rightarrow \text{جواب}$$

$$y = ax^2 + (\mu + \mu a)x \rightarrow \text{چون نداریم از معادله ای که}$$

$$a > 0$$

$$x = -\frac{\mu a + \mu}{a} > 0 \rightarrow \frac{-\mu}{a} < 0 \rightarrow a < 0 \rightarrow \text{نه از این هیچ مقدار}$$



$$y = x^2 + ax - 2, y = -x^2 - 2x + b \xrightarrow{\text{مقادیر } x} \frac{-a}{\mu} = -1 \rightarrow -a = -2 \rightarrow a = 2$$

$$\left\{ \begin{aligned} x^2 + ax - 2 = 1 \\ -x^2 - 2x + b = 1 \end{aligned} \right\} \rightarrow 2 - b = 2 \rightarrow b = 0 \quad ab = 2 \times 0 = 0 \rightarrow \text{جواب}$$

$$x^2 - ax + b = 0$$

$$\text{ریشه ها: } \alpha + \beta = a, \alpha\beta = b$$

$$x^2 + ax - 4 = 0$$

$$\text{ریشه ها: } \alpha, \beta$$

$$\alpha + \beta = -\frac{b}{a} = \frac{-4}{1} = -4, \alpha\beta = \frac{c}{a} = \frac{-4}{1} = -4 \rightarrow a = 1$$

$$(\alpha + 0/4)(\beta + 0/4) = \frac{c}{a} = \frac{b}{\mu} \rightarrow \alpha\beta + 0/4(\alpha + \beta) + 0/16 = \frac{b}{\mu} \rightarrow -4 + 0/4(-4) = \frac{b}{\mu} \rightarrow -4 = \frac{b}{\mu}$$

$$\rightarrow b = -4 \rightarrow \left[\frac{ab}{\varepsilon} \right] = \left[\frac{(1)(-4)}{\varepsilon} \right] = \left[\frac{-4}{\varepsilon} \right] = -2 \rightarrow \text{جواب}$$

$$\left\{ \begin{aligned} x^2 + 4x + m = 0 \xrightarrow{x = -m} (-m)^2 - 4m + m = 0 \rightarrow (-m)^2 - 3m = 0 \rightarrow m(m - 3) = 0 \\ x^2 + 2x - 3m = 0 \rightarrow x^2 + 4x + 4 = 0 \rightarrow (x + 2)^2 = 0 \rightarrow x = -2 \end{aligned} \right.$$

$$-4x - 4m = 0 \rightarrow x = -m, x^2 + 2x - 1 = 0 \rightarrow (x + 1)(x - 1) = 0 \rightarrow \begin{cases} x = -1 \\ x = 1 \end{cases}$$

$$\text{اختلاف غیر متغیر} \rightarrow 1 - (-1) = 2 \rightarrow \text{جواب}$$