

$$q = a - b + c$$

$$r = a + b + c$$

$$\rightarrow 12 = 2a + 2c \rightarrow a + c = 6 \rightarrow b = -3$$

$$y = -\frac{3}{2}x^2 - 3x + \frac{15}{2}$$

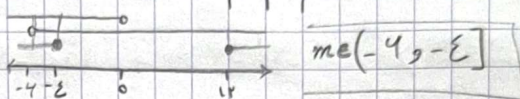
$$\rightarrow \frac{-b}{2a} = -1 \rightarrow \frac{3}{2a} = -1 \rightarrow 3 = -2a \rightarrow a = -\frac{3}{2} \quad q - (-\frac{3}{2}) = \frac{15}{2} \rightarrow c = \frac{15}{2}$$

$$a > 0 \rightarrow 2$$

$$\Delta > 0 \rightarrow m^2 - 12m - 12 > 0 \rightarrow (m + 12)(m - 12) > 0 \rightarrow \begin{array}{c} -12 \quad 12 \\ + \quad - \quad + \end{array} \quad (-\infty, -12] \cup [12, +\infty)$$

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

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



$$x = \frac{1}{p} \rightarrow \frac{-b}{a} = \frac{a}{c} \rightarrow a^2 = (-b)(c) \rightarrow 9 = (2m+1)(2-m) \rightarrow 9 = 2m^2 - 2m + 1 \rightarrow -2m^2 + 2m - 8 = 0 \quad (*)$$

$$2x^2 + (2m-1)x + 2-m = 0 \rightarrow \Delta > 0 \rightarrow 8m^2 - 8m + 1 - 2 + 12m > 0 \rightarrow 8m^2 + 4m - 1 > 0 \rightarrow \text{نمی‌گذرد}$$

$$\text{مثلاً } 2m^2 - 2m - 8 = 0 \rightarrow (m+2)(m-4) = 0 \rightarrow m = -2 \text{ و } \frac{4}{2}$$

$$\rightarrow m = \frac{4}{2}$$

$$x^2 - x - 2 = 0 \rightarrow \Delta > 0 \rightarrow 1 + 4 = 5 \rightarrow x_1, x_2 = \frac{1 \pm \sqrt{5}}{2}$$

$$\begin{aligned} \left(\frac{1+\sqrt{5}}{2}\right)^2 + \frac{1}{\frac{1+\sqrt{5}}{2}} &= \frac{1+1\sqrt{5}}{1} + \frac{2}{1+\sqrt{5}} \\ \left(\frac{1-\sqrt{5}}{2}\right)^2 + \frac{1}{\frac{1-\sqrt{5}}{2}} &= \frac{1-1\sqrt{5}}{1} + \frac{2}{1-\sqrt{5}} \end{aligned} \quad (E)$$

$$\sqrt{x} = t$$

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

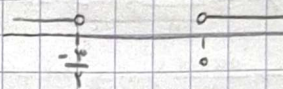
$$(t^2 - 1) + t^2 - 1 = 2t \rightarrow t^2 + t^2 - 2 = 2t$$

(4)

$$c > 0 \rightarrow c = 0$$

$$a > 0 \rightarrow a > 0$$

$$x_5 > 0 \rightarrow \frac{-b}{2a} > 0 \rightarrow \frac{-3-2a}{2a} > 0 \rightarrow -2a-3 > 0 \rightarrow 2a < -3 \rightarrow a < -\frac{3}{2}$$

(7) به ازای همه مقادیر a از ناحیه سوم می گذرد

$$\frac{-a}{2} = \frac{2}{-2} \Rightarrow \frac{-a}{2} = -1 \rightarrow a = 4$$

(11)

$$\Delta = b^2 - 4ac = 4 - 4(1)(1) = 0 \quad \Delta = 0 \quad \Delta = 0 \quad \Delta = 0 \quad \Delta = 0$$

$$-x_1 = -x_2$$

$$\text{با } P \rightarrow \frac{+a}{2} = 1 + \frac{-a}{2a} \rightarrow \frac{a}{2} = \frac{1}{2} \rightarrow a = 1$$

(9)

$$\text{با } P \rightarrow \frac{1}{\varepsilon} \left(\frac{b}{2} \right) = \frac{4}{2} \rightarrow \frac{b}{1} = \frac{4}{2} \rightarrow 2b = 4 \rightarrow b = 2$$

$$\left[\frac{ab}{\varepsilon} \right] = \left[\frac{2 \cdot 2}{\varepsilon} \right] = 4$$

جواب سیستم α

(10)

$$\alpha^2 + 4\alpha + m = 0$$

$$\alpha^2 + 2\alpha - 3m = 0$$

$$\rightarrow (\alpha^2 + 4\alpha + m) - (\alpha^2 + 2\alpha - 3m) = 0 \rightarrow 2\alpha + 4m = 0 \rightarrow m = -\alpha$$

$$\alpha^2 + 4\alpha - \alpha = 0 \rightarrow \alpha^2 + 3\alpha = 0 \rightarrow \alpha = 0 \text{ یا } \alpha = -3$$

$$\rightarrow m = \alpha$$

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

$$x^2 + 2x - 1\alpha = 0 \rightarrow (x+\alpha)(x-3) = 0$$

$$\Rightarrow \begin{matrix} -\alpha \text{ سیستم اول} \\ \alpha \text{ سیستم دوم} \end{matrix} \rightarrow x = -1, x = 3 \rightarrow 3 - (-1) = 4$$