

$$y = am^2 + bm + c$$

$$\text{Ext} \left| \frac{1}{9} = -\frac{b}{2a} \Rightarrow b = 2a \right\} \Rightarrow y = am^2 + 2am + c \Rightarrow \boxed{y = -\frac{1}{4}x^2 - 2x + 1, a}$$

$$\left. \begin{aligned} m = -1 \Rightarrow y = a - 2a + c = 9 \\ m = 3 \Rightarrow y = 9a + 6a + c = 1 \end{aligned} \right\} \Rightarrow 14a = -1 \Rightarrow a = -\frac{1}{14}, c = 1, a$$

$$\Downarrow b = 2a = -\frac{1}{7}$$

$$m_1, m_2 > 0 \Rightarrow m_1 + m_2 = S > 0 \Rightarrow -\frac{b}{a} > 0 \Rightarrow -\frac{m}{p} > 0 \Rightarrow (m < 0) (*)$$

$$m_1 \times m_2 = P > 0 \Rightarrow \frac{c}{a} > 0 \Rightarrow \frac{m+q}{p} > 0 \Rightarrow (m > -q) (**)$$

$$\Delta > 0 \Rightarrow b^2 - 4ac > 0 \Rightarrow m^2 - 4(m+q)(p) > 0 \Rightarrow$$

$$m^2 - 4m - 4p(m+q) > 0 \Rightarrow (m-12)(m+4) > 0 \Rightarrow \frac{-12}{+ \infty} - \frac{12}{- \infty} \Rightarrow D_m \in (-\infty, -4) \cup (12, +\infty) (***)$$

$$(*) \cap (**) \cap (***) = (-\infty, -4)$$

$$m_1 + m_2 = \frac{1}{m_1 m_2} \Rightarrow S = \frac{1}{P} \Rightarrow -\frac{b}{a} = \frac{1}{\frac{c}{a}} = \frac{a}{c} \Rightarrow -\frac{b}{a} = \frac{a}{c} \Rightarrow$$

$$\frac{-(2m-1)}{3} = \frac{m}{p-m} \Rightarrow 9 = (2m-1)(m-p) \Rightarrow 2m^2 - 4m - V = 0 \Rightarrow m^2 - 2m - 14 = 0$$

$$\Delta > 0 \Rightarrow (2m-1)^2 - 4(2m-1)(m-p) > 0 \Rightarrow 4m^2 + 1 - 4(2m^2 - 2mp - m + p) > 0 \Rightarrow 4m^2 + 1 - 8m^2 + 8mp + 4m - 4p > 0 \Rightarrow -4m^2 + 8mp + 4m - 4p + 1 > 0$$

$$m^2 - 2m - 14 = 0 \Rightarrow \left. \begin{aligned} S = 1 = m_1 + m_2 \\ P = -14 = m_1 \times m_2 \end{aligned} \right\} \Rightarrow \boxed{y = x^2 - 5x + 14}$$

برای دو و دو معادله
صورت ساده را حساب
کنیم

$$P(m_1^2 + \frac{1}{m_1})(m_2^2 + \frac{1}{m_2}) = \frac{m_1^2 m_2^2}{P} + \frac{m_1^2 + m_2^2}{S - 2P} + \frac{1}{m_1 m_2} = -9 + 9 - \frac{1}{4} = -\frac{1}{4} = \frac{1}{4} \Rightarrow$$

$$S = m_1^2 + m_2^2 + \frac{1}{m_1} + \frac{1}{m_2} = S - 2SP + \frac{S}{P} = 1 + 12 - \frac{1}{4} = 13 - \frac{1}{4} = \frac{51}{4} \Rightarrow \boxed{y = m^2 - \frac{51}{4}m - \frac{121}{4}}$$

$$x\sqrt{m} + x + \sqrt{m} - \sqrt{m} - \frac{1}{\sqrt{m}} \Rightarrow x = \sqrt{m} \Rightarrow$$

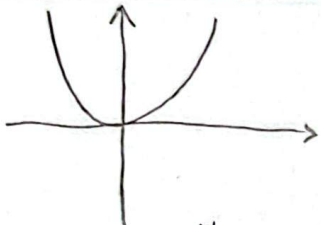
$$x\sqrt{m} - \frac{1}{\sqrt{m}} - \sqrt{m} = 0 \xrightarrow{\text{تکثیر با } \sqrt{m}} x^2 - 1 - 2x = 0 \Rightarrow S = -\frac{b}{a} = 2$$

$$u_1 = \sqrt{m} \sqrt{p}$$

$$u_1 \cdot u_2 = p = \frac{c}{a} \Rightarrow p = \frac{c}{a} \Rightarrow \sqrt{m} \sqrt{p} \cdot \sqrt{p} = \frac{c}{a} \Rightarrow \sqrt{m} \cdot \frac{c}{a} \Rightarrow m = \frac{a}{c} \Rightarrow m = \pm \frac{a}{c}$$

$$m_1 = \sqrt{p}, m_2 = \frac{p}{\sqrt{p}} \Rightarrow S = -\frac{b}{a} = -\frac{1}{\sqrt{p}} = -\frac{a}{p} \Rightarrow a = 1 \Rightarrow m_1 = \pm \sqrt{p}$$

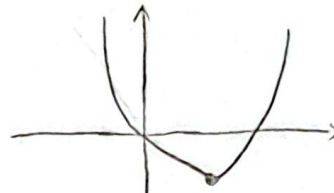
$$u_1 = -\sqrt{p}, m_2 = -\frac{p}{\sqrt{p}} \Rightarrow S = -\frac{b}{a} = -\frac{1}{\sqrt{p}} = -\frac{a}{p} \Rightarrow a = 1 \Rightarrow 1 - (-1) = 2$$



$$a > 0$$

$$\Delta = 0 \Rightarrow b^2 - 4ac = 0 \Rightarrow b^2 = 4ac$$

$$b^2 = 0 \Rightarrow \sqrt{p} + \sqrt{p} = 2 \Rightarrow \sqrt{p} = 1 \Rightarrow p = 1 \Rightarrow S > 0 \Rightarrow -\frac{p - 2a}{a} > 0 \Rightarrow \frac{-\frac{p}{\sqrt{p}} + \frac{0}{\sqrt{p}}}{-1 + 1} = \frac{-\frac{p}{\sqrt{p}}}{0} \Rightarrow (-\frac{p}{\sqrt{p}}, 0)$$



۲ حالت داریم:

$$a > 0$$

$$C = 0$$

از این دو حالت داریم:

$$0 \neq -\frac{p}{\sqrt{p}} \Rightarrow p = \frac{p}{\sqrt{p}} \Rightarrow p = 1$$

$$p = 1 \Rightarrow S = -\frac{b}{a} = -\frac{1}{\sqrt{p}} = -\frac{a}{p} \Rightarrow a = 1 \Rightarrow 1 - (-1) = 2$$

محور تقارن همی فکین است پس u اکسدم با هم برابر است:

$$-\frac{a}{p} = -\left(-\frac{p}{\sqrt{p}}\right) = 1 \Rightarrow \frac{a}{p} = 1 \Rightarrow a = p \Rightarrow m^2 + \sqrt{p}m - p = 0$$

$$m^2 + \sqrt{p}m - p = 0 \Rightarrow (m + \sqrt{p})(m - \sqrt{p}) = 0 \Rightarrow m = 1 \text{ or } m = -2 \Rightarrow a = p, b = -c \Rightarrow ab = 1$$

$$-m^2 - \sqrt{p}m + b = 1 \Rightarrow -1 - 2 + b = 1 \Rightarrow b = 4 \Rightarrow -9 + 4 + b = 1 \Rightarrow b = 6 \Rightarrow b = 4$$

$$m^2 - am + b = 0 \xrightarrow{\text{ریشه ها}} \alpha, \beta \Rightarrow \alpha + \beta = -\frac{b}{a} = +\frac{a}{p} = \left(\frac{1}{\sqrt{p}}\right)$$

$$p a m^2 + a m - c \xrightarrow{\text{ریشه ها}} \alpha + \frac{1}{\alpha}, \beta + \frac{1}{\beta} \Rightarrow \alpha + \beta + 1 = -\frac{b}{a} = -\frac{a}{p} = \left(-\frac{1}{\sqrt{p}}\right)$$

$$\left\{ \begin{array}{l} \frac{a}{p} = 1 - \frac{1}{\sqrt{p}} \Rightarrow \alpha = 1 \\ p = \frac{c}{a} = \frac{4}{1} = 4 \Rightarrow \beta = -\frac{p}{\sqrt{p}} = -\frac{4}{2} = -2 \end{array} \right\} \Rightarrow (\alpha + \frac{1}{\alpha})(\beta + \frac{1}{\beta}) = \alpha\beta + \left(\frac{\alpha + \beta}{\frac{1}{\alpha} + \frac{1}{\beta}}\right) + \frac{1}{\frac{1}{\alpha} + \frac{1}{\beta}} = -2 \Rightarrow \alpha\beta = -\frac{p}{\sqrt{p}} = -\frac{4}{2} = -2 \Rightarrow \frac{b}{a} = -\frac{p}{\sqrt{p}} = -2 \Rightarrow b = -2a \Rightarrow b = -8 \Rightarrow b = -8$$

$$\beta + 4\beta + m = \beta + \sqrt{p}\beta - \sqrt{p}m \Rightarrow \beta = -\sqrt{p}m \Rightarrow \beta = -m \Rightarrow m^2 - 4m + m = 0 \Rightarrow m^2 - 3m = 0 \Rightarrow m(m - 3) = 0 \Rightarrow m = 0 \text{ or } m = 3$$

$$m = 0 \Rightarrow m^2 + 4m + d = 0 = (m + d)(m + 1) \Rightarrow m = -1 \Rightarrow m^2 + \sqrt{p}m - 1d = 0 = (m + d)(m - \sqrt{p}) \Rightarrow m = \sqrt{p} \Rightarrow m = 2 \Rightarrow m = 2$$

$$m = 2 \Rightarrow m^2 + 4m + d = 0 = (m + d)(m + 1) \Rightarrow m = -1 \Rightarrow m^2 + \sqrt{p}m - 1d = 0 = (m + d)(m - \sqrt{p}) \Rightarrow m = \sqrt{p} \Rightarrow m = 2 \Rightarrow m = 2$$