

$$x_3 = \frac{-1}{1a} = -1 \Rightarrow b = -1a$$

$$y = ax^2 + b_1x + c = ax^2 + 1ax + c$$

$$y = 9 = a - 1a + c = c - a \quad (1, 1) \Rightarrow 1 = 9a + 1a + c = 10a + c$$

$$10a = -1 \Rightarrow a = -\frac{1}{10} \Rightarrow b = -1$$

$$9 = c + \frac{1}{10} \Rightarrow c = \frac{19}{10} \Rightarrow y = -\frac{1}{10}x^2 - x + \frac{19}{10}$$

$$2m^2 + m\alpha + 1 - 4 = 0 \quad \alpha, \beta \sim \alpha > 0 \quad \beta > 0$$

$$\Rightarrow \alpha + \beta > 0 \Rightarrow \frac{-m}{2} > 0 \Rightarrow m < 0 \quad ①$$

$$\alpha\beta > 0 \Rightarrow \frac{m+4}{2} > 0 \Rightarrow m > -4 \quad ②$$

$$\Delta > 0 \Rightarrow m^2 - 1m + 4 > 0 \Rightarrow (m-1/2)^2 > -15/4 \Rightarrow m < -1 \quad ③$$

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

$$\Delta > 0 \Rightarrow 4m^2 - 4m + 1 - 2m + 1 > 0 \Rightarrow 4m^2 - 6m + 2 > 0$$

$$\alpha + \beta = \frac{1}{2} \Rightarrow \frac{1-2m}{2} = \frac{1}{2} \Rightarrow 1-2m = 1 \Rightarrow 2m = 0 \Rightarrow m = 0$$

$$\Delta > 0 \Rightarrow (m - \frac{1}{2})^2 > -\frac{1}{4} \Rightarrow m < 0 \quad \checkmark$$

$$a = at^2 \Rightarrow at^2 - at - 1 = 0 \Rightarrow \begin{cases} a_1 + a_2 = 1 \\ a_1 a_2 = -1 \end{cases}$$

$$y_1 = at^2 + \frac{1}{at} = a_1 t + \frac{1}{a_1 t}$$

$$y_2 = at^2 + \frac{1}{at} = a_2 t + \frac{1}{a_2 t}$$

$$\frac{b}{a} = y_1 y_2 = (a_1 t + \frac{1}{a_1 t})(a_2 t + \frac{1}{a_2 t}) = a_1 a_2 t^2 + \frac{1}{a_1 a_2} + \frac{a_2}{a_1} + \frac{a_1}{a_2}$$

$$t = \sqrt{m} \Rightarrow (t^2 + \frac{1}{t^2} + 1)(t^2 - 1) = t^4 - 1 \Rightarrow t^4 - 1 = 0 \Rightarrow t^2 = 1 \Rightarrow t = \pm 1$$

$$x^2 - ax + 1 = 0 \quad \alpha = \beta \quad \alpha + \beta = 1 \quad \alpha\beta = 1$$

$$\alpha\beta = \frac{1}{\beta} = 1 \Rightarrow \beta = 1 \quad \alpha + \beta = 1 \Rightarrow \alpha = 0$$

$$\frac{a}{\beta} = \frac{1}{\beta} \Rightarrow a = 1$$

$$1 - (-1) = 1 \quad \checkmark$$

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$$y = ax^2 + (3+2a)x \quad \text{از این معادله می توانیم بنویسیم} \quad \alpha > 0 \Rightarrow 3+2a > 0 \Rightarrow a > -\frac{3}{2}$$

$$a > -\frac{3}{2} \quad \text{مجموع مساوی} \quad \frac{3}{2} < a < 0$$

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$$y = x^2 + ax - 2 \quad \text{مشتق می گیریم} \quad y' = 2x + a = 0 \Rightarrow x = -\frac{a}{2}$$

$$y = x^2 + ax - 2 \quad y = 1 \Rightarrow 1 = x^2 + ax - 2$$

$$y = -x^2 - 2m + b \quad y = 1 \Rightarrow 1 = -x^2 - 2m + b \quad \text{از این معادله می توانیم بنویسیم} \quad a = 1 \quad b = 2m + 1$$

$$\alpha + \beta = 1 \quad \alpha\beta = 1 \Rightarrow \alpha = 1 \quad \beta = 1$$

$$\alpha' = \frac{1}{\alpha} = 1 \quad \beta' = \frac{1}{\beta} = 1$$

$$P_1 = (\alpha' + \frac{1}{\alpha}) (\beta' + \frac{1}{\beta}) = P_2 + \frac{1}{\alpha} + \frac{1}{\beta} = -3 + 1 + 1 = -1$$

2

9

$$x^2 + 401x + 1 = 0 \quad \alpha, \beta \quad \alpha + \beta = -401$$

$$x^2 + 2m - 3 = 0 \quad \alpha, \beta' \quad \alpha + \beta' = -2$$

$$| \alpha + \beta' | - | \alpha + \beta | = | \beta' - \beta | = -2 - (-401) = 399$$

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