

$$y = (a-1)x^2 + x + 3 \quad \text{معرفة: } x=2$$

$$\frac{-b}{2a} = \frac{-1}{2(a-1)} = 2 \Rightarrow 4a - 4 = -1 \Rightarrow 4a = 3 \Rightarrow a = \frac{3}{4}$$

$$y = -\frac{1}{4}x^2 + x + 3 \xrightarrow{y=0} x^2 - 4x - 12 = 0 \Rightarrow (x-6)(x+2) = 0 \Rightarrow \begin{cases} x=6 \\ x=-2 \end{cases}$$

$$f(x) = mx^2 - \omega x + m \quad \text{بشرط: } \begin{cases} \Delta > 0 \\ m < 0 \end{cases} \rightarrow \text{مقطع جبرل}$$

$$\Delta = 2\omega - 4(m)(m) = 2\omega - 4m^2 > 0 \rightarrow 4m^2 < 2\omega \Rightarrow m^2 < \frac{\omega}{2} \rightarrow |m| < \frac{\sqrt{\omega}}{\sqrt{2}} \Rightarrow -\frac{\sqrt{\omega}}{\sqrt{2}} < m < \frac{\sqrt{\omega}}{\sqrt{2}}$$

$$\alpha = \frac{2-\sqrt{5}}{2}, \beta = \frac{2+\sqrt{5}}{2}$$

$$S = \alpha + \beta = \frac{2-\sqrt{5}}{2} + \frac{2+\sqrt{5}}{2} = 2$$

$$p = \alpha \cdot \beta = \frac{1}{4} (2-\sqrt{5})(2+\sqrt{5}) = \frac{1}{4} (4-5) = -\frac{1}{4} \Rightarrow x^2 - 2x + \frac{1}{4} = 0 \Rightarrow$$

$$4x^2 - 8x + 1 = 0$$

$$2x^2 - 4x + m + 2 = 0 \quad \alpha + \beta = 4, \alpha \cdot \beta = \frac{m+2}{2}$$

$$2\alpha^2 + 2\beta^2 = 12 \rightarrow 2\alpha^2 + 2\alpha^2 + 2\beta^2 = 12 \rightarrow 4\alpha^2 + 4\beta^2 = 12 \rightarrow \alpha^2 + \beta^2 = 3$$

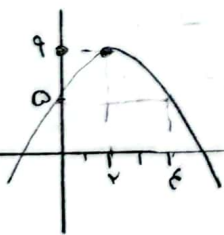
$$2\alpha^2 = m - 2 \rightarrow \alpha^2 = \frac{m-2}{2} \rightarrow 2\alpha^2 = 4\alpha - m - 2 \Rightarrow m - 2 = 4\alpha - m - 2 \rightarrow m = 4\alpha$$

$$\alpha + \beta = 4 \rightarrow \beta = 4 - \alpha \rightarrow \alpha \cdot \beta = \alpha(4 - \alpha) = \frac{4\alpha + 2}{2} = 2\alpha + 1 \rightarrow 4\alpha - \alpha^2 = 2\alpha + 1 \Rightarrow$$

$$\alpha^2 - 2\alpha + 1 = 0 \rightarrow (\alpha - 1)^2 = 0 \rightarrow \alpha = 1, m = 4$$

$$\beta = 3$$

$$S(2, 9), (0, 5), (4, 5) \quad y = ax^2 + bx + c \quad (0, 5) \rightarrow c = 5$$



$$(2, 9) \rightarrow 9 = 4a + 2b + 5 \rightarrow 4a + 2b = 4 \rightarrow 2(2a + b) = 4 \rightarrow$$

$$\begin{cases} 2a + b = 2 \\ 4a + b = 0 \end{cases} \rightarrow \begin{cases} 2a + b = 2 \\ -2a = -2 \end{cases} \Rightarrow \begin{cases} 2a + b = 2 \\ a = 1 \end{cases} \Rightarrow \begin{cases} 2(1) + b = 2 \\ a = 1 \end{cases} \Rightarrow \begin{cases} b = 0 \\ a = 1 \end{cases}$$

$$\begin{cases} 2a + b = 2 \\ 4a + b = 0 \\ -2a = -2 \end{cases}$$

$$-2a = -2 \rightarrow a = 1, b = 0 \rightarrow y = -x^2 + 4x + 5$$

$$\xrightarrow{y=0} x^2 - 4x - 5 = 0 \rightarrow (x-5)(x+1) = 0 \rightarrow \begin{cases} x = -1 \\ x = 5 \end{cases} \rightarrow (-1, 0) \leftarrow \text{نقطه برش در محور x}$$

$$\alpha x^2 - \nu x + \frac{9\beta}{\alpha} = 0 \quad \beta > 0 \quad \frac{1}{\alpha} + \frac{1}{\beta} = \frac{\alpha + \beta}{\alpha\beta} = \left(\frac{-\frac{\nu}{\alpha}}{\frac{9\beta}{\alpha}} \right) = -\frac{\nu}{9\beta}$$

$$S = -\frac{\nu}{\alpha}, P = \frac{9\beta}{\alpha}$$

$$x^2 + mx - \gamma m = 0 \quad \alpha^2 - m\beta = 1 \quad \alpha + \beta = ?$$

$$\alpha + \beta = -m = s, \quad p = -\gamma m$$

$$\begin{cases} \alpha + \beta = -m \rightarrow \beta = -m - \alpha \\ \alpha \cdot \beta = -\gamma m \Rightarrow \alpha(-m - \alpha) = -\gamma m \Rightarrow -m\alpha - \alpha^2 = -\gamma m \Rightarrow \end{cases}$$

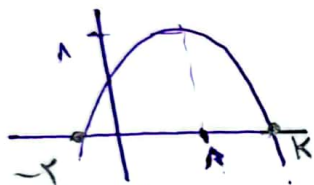
$$\alpha^2 + m\alpha - \gamma m = 0 \Rightarrow \alpha^2 + m\beta = \gamma m \Rightarrow \alpha^2 = \gamma m - m\beta$$

$$\alpha^2 - m\beta = 1 \rightarrow \gamma m - \underbrace{m\beta}_{-\gamma m\beta} = 1 \rightarrow \gamma m(1 - \beta) = 1 \rightarrow$$

$$m(1 - \beta) = \frac{1}{\gamma} \rightarrow m = \frac{\frac{1}{\gamma}}{1 - \beta}$$

$$\beta = -m - \alpha \rightarrow \beta = \frac{-\frac{1}{\gamma}}{1 - \beta}$$

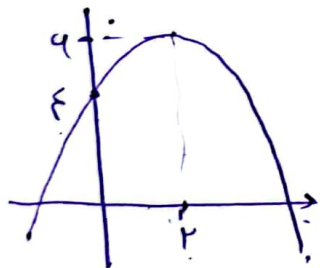
$$f(x) = mx^2 + \frac{1}{\gamma}x + \frac{m}{\gamma} + \gamma \quad m < 0 \quad 1\gamma - \gamma m^2 - \gamma \lambda m$$



$$\Delta_s = 1 \quad \Delta_s = \frac{-\Delta}{fa} = -\frac{(1\gamma - \gamma m^2 - \gamma \lambda m)}{\gamma m} = \gamma$$

$$\frac{\gamma m^2 + \gamma \lambda m - 1\gamma}{\gamma m} = \frac{\gamma(m^2 + 1\lambda m - 1)}{\gamma m \times \gamma} = 1$$

$$m^2 + 1\lambda m - 1 = 1\gamma m \rightarrow m^2 - \gamma m - 1 = 0 \rightarrow (m - \gamma)(m + 1) = 0 \rightarrow \begin{cases} m = \gamma \\ m = -1 \end{cases}$$



$$(0, f), (r, 4)$$

$$y = ax^2 + bx + c \Rightarrow c = f$$

$$y = ax^2 + bx + f \rightarrow x_s = \frac{-b}{2a} = \gamma \rightarrow -b = 2\gamma a \rightarrow b = -2\gamma a$$

$$y = ax^2 - 2\gamma ax + f$$