

Amos, 14, 15

$$y = (a+1)x^2 + x + m$$

$$\frac{-b}{2a} = x$$

$$\frac{-1}{2(a+1)} = x \Rightarrow -\epsilon a + \epsilon z \Rightarrow -\epsilon a - y \Rightarrow a = \frac{y}{\epsilon} \checkmark$$

(1, 15) -1

$$y = -\frac{1}{\epsilon}x^2 + x + m \xrightarrow{x=\frac{1}{2}} x^2 - \epsilon x - 1 \geq 0 \Rightarrow \begin{matrix} x_1 = \frac{1}{2} \times \\ x_2 = \frac{1}{2} \checkmark \end{matrix} + \text{طوبه}$$

$$f(x) = mx^2 - \epsilon x + m$$

$$\Delta \geq 0 \Rightarrow b^2 - 4ac \geq 0 \Rightarrow \epsilon^2 - 4m^2 \geq 0 \Rightarrow m^2 \leq \frac{\epsilon^2}{4} \Rightarrow -\frac{\epsilon}{2} \leq m \leq \frac{\epsilon}{2}$$

f(x)	x ₁	x ₂
2	-	-

$$a < 0 \Rightarrow m < 0 \rightarrow -\frac{\epsilon}{2} < m < 0 \checkmark$$

$$x_1 = \frac{\epsilon + \sqrt{\Delta}}{2}, x_2 = \frac{\epsilon - \sqrt{\Delta}}{2}$$

$$\begin{cases} x_1 - \left(\frac{\epsilon + \sqrt{\Delta}}{2}\right) = 0 \\ x_2 - \left(\frac{\epsilon - \sqrt{\Delta}}{2}\right) = 0 \end{cases} \quad \begin{matrix} S = x & P = \frac{\epsilon}{2} \\ x^2 - Sx + P = 0 \end{matrix}$$

(1, 15) -1

$$\left(x - \left(\frac{\epsilon + \sqrt{\Delta}}{2}\right)\right)\left(x - \left(\frac{\epsilon - \sqrt{\Delta}}{2}\right)\right) = x^2 + x\left(\frac{-\epsilon + \sqrt{\Delta} - \epsilon - \sqrt{\Delta}}{2}\right) + (9 - \Delta) = x^2 + x\left(\frac{-\epsilon}{2}\right) + \frac{9\epsilon}{2} = x^2 - \frac{\epsilon}{2}x + \frac{9\epsilon}{2}$$

$$\rightarrow \cancel{x^2 - \frac{\epsilon}{2}x + \frac{9\epsilon}{2}} \quad 9x^2 - 18x + \epsilon = 0$$

$$y = ax^2 - 18x + m + \epsilon \quad \alpha < \beta \quad \epsilon x^2 + \beta^2 \geq 12$$

(1, 15) -1

$$\epsilon x^2 + \beta^2 \geq 12 \Rightarrow (\alpha^2 + \beta^2) + \epsilon x^2 \geq 12 \Rightarrow (S^2 - 2P) + \epsilon x^2 \geq 12$$

$$\left(-\left(\frac{-1}{\epsilon}\right)\right)^2 - \epsilon\left(\frac{9m + \epsilon}{\epsilon}\right) + \epsilon x^2 \geq 12 \Rightarrow 14 - m - \epsilon + \epsilon x^2 \geq 12 \xrightarrow{\alpha < \beta} x = \frac{-b - \sqrt{\Delta}}{2a} = \frac{1 - \sqrt{4\epsilon - 18(m + \epsilon)}}{\epsilon}$$

$$= \frac{1}{\epsilon} + \frac{\sqrt{4\epsilon - 18(m + \epsilon)}}{\epsilon} \Rightarrow \epsilon x^2 = \frac{1}{\epsilon} + \frac{\sqrt{4\epsilon - 18(m + \epsilon)}}{\epsilon} = \frac{1}{\epsilon} + \frac{\sqrt{4\epsilon - 18(m + \epsilon)}}{\epsilon}$$

$$\Rightarrow 14 - m - \epsilon + \frac{1}{\epsilon} + \frac{\sqrt{4\epsilon - 18(m + \epsilon)}}{\epsilon} \geq 12 \rightarrow \boxed{m = 1}$$

$$S(1, 9) \rightarrow \left(\frac{h}{K}\right) : a(x-h)^2 + k$$

$$a(x-1)^2 + 9 = a(x^2 - 2x + 1) + 9 = ax^2 - 2ax + a + 9 = ax^2 - \epsilon ax + \epsilon a + 9$$

(1, 15) 15

$$\Rightarrow \epsilon a + 9 \geq 0 \Rightarrow a \geq -1$$

$$-(x-1)^2 + 9 = -x^2 + 2x - 1 + 9 = -x^2 + 2x + 8$$

$$-x^2 + 2x + 8 > 0$$

$$\begin{matrix} x^2 - 2x - 8 < 0 \\ (x-4)(x+2) < 0 \end{matrix}$$

f(x)	-1	0
x	-	+

$$(-1, 0) \checkmark$$

$$\alpha^2 + 4\alpha + 4\beta = 0 \quad \frac{1}{\alpha} + \frac{1}{\beta} = \frac{V}{4}$$

(1, 7.5) - 4

$$P = \alpha\beta = \frac{q\beta}{\alpha} \Rightarrow \alpha\beta = q\beta \quad \beta(\alpha - q) = 0 \quad \begin{cases} \beta = 0 \rightarrow \frac{1}{\beta} = 0 \text{ غلط} \\ \alpha = q \end{cases}$$

$$\alpha = q \rightarrow \frac{V}{\alpha} = \alpha + \beta \Rightarrow V = \alpha^2 + \alpha\beta \Rightarrow \alpha\beta = V - \alpha^2 \Rightarrow \beta = 0, \alpha < 0$$

$$\alpha = -q \rightarrow -q\beta = -V \Rightarrow \beta = \frac{V}{q}$$

(2) 1, V

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

$$S = \frac{-b}{a} = \frac{-m}{2}$$

$$\alpha^2 - m\beta = 1$$

$$\alpha^2 + (\alpha + \beta)\beta = 1 \Rightarrow \alpha^2 + \beta^2 + \alpha\beta = 1 \Rightarrow S^2 - 4P + P = 1 \Rightarrow S^2 - P = 1$$

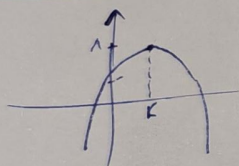
$$(-m)^2 - (-2m) = 1 \quad m^2 + 2m - 1 = 0 \Rightarrow (m+1)(m-1) = 0 \Rightarrow m = 1, m = -1$$

$$\Delta \geq 0 \Rightarrow m = -1 \Rightarrow (-1)^2 - 2 \times 2 = 1 - 4 = -3 < 0 \text{ غلط}$$

$$m = 1 \Rightarrow 1 + 4 = 5 > 0 \checkmark$$

$$S = \frac{-b}{a} = \frac{-m}{2} = -\frac{1}{2} \checkmark$$

(1, 2.5) 1, 1



$$f(x) = m\alpha^2 + \epsilon\alpha + \frac{m}{2} + V$$

$$y_{ext} = \frac{-\Delta}{\epsilon a} = \frac{-(14 - \epsilon m(\frac{m}{2} + V))}{\epsilon m} = 1 \Rightarrow \frac{m^2}{2} - 14m + 4V - \epsilon = 0$$

$$\Rightarrow m^2 - 28m - 1 = 0 \Rightarrow m = 28, m = -\frac{1}{28}$$

اگر

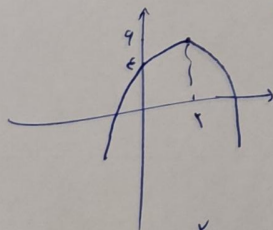
$m < 0 \Rightarrow m = -\frac{1}{28}$ چرا ادا نه زادی؟

$$(m - \epsilon)(m + 1) \quad f(m) = -2m^2 + \epsilon m + 4 = 0 \rightarrow \begin{cases} m = -1 \\ m = 2 \end{cases} \checkmark$$

کسب است!

(2) 9

$$y = a(m - h)^2 + k$$



$$y = a(m - 1)^2 + 4 \quad \Delta \geq 0 \Rightarrow \epsilon = a(0 - 1)^2 + 4 \Rightarrow a = -\frac{1}{5}$$

$$y = -\frac{1}{5}(m - 1)^2 + 4 = -\frac{m^2}{5} + \frac{2m}{5} + 4 = 0 \Rightarrow m^2 - 2m - 20 = 0$$

$$S = \frac{-(-2)}{1} = 2$$

$$P = \frac{-1}{1} = -1$$

$$\frac{1}{\alpha} + \frac{1}{\beta} = \frac{\alpha + \beta}{\alpha\beta} = \frac{S}{P} = \frac{2}{-1} = -2$$

$$= \left(-\frac{1}{2}\right) \checkmark$$

$$x^2 - (c a + c) x + (w a^2 + y a + w) = 0 \rightarrow x_2 = \frac{c a + c}{2}$$

(1, VA)

-10

$$x_2 = c \rightarrow c = \frac{1}{a} - \frac{1}{w} + w a^2 + y a + w = 0 \Rightarrow w a^2 - \frac{1}{a} = 0 \Rightarrow \begin{cases} x_1 = 1 \\ x_2 = \frac{c}{a} = -\frac{1}{w} \end{cases}$$

دقت!

$$\Delta > 0 \begin{cases} a = 1 \Rightarrow x^2 - \frac{1}{a} x + \frac{1}{w} = 0 \Rightarrow \Delta = \frac{1}{a^2} - \frac{4}{w} = -\frac{1}{w} < 0 \end{cases} \begin{cases} n = 2 \\ n = 4 \end{cases}$$

$$a = -\frac{1}{w} \Rightarrow x^2 - \frac{1}{w} x + \frac{1}{w} = 0 \xrightarrow{\Delta > 0} \begin{cases} 2\alpha + \beta = \frac{1}{w} \end{cases}$$

$$\alpha + \beta = \frac{1}{w} \Rightarrow \alpha = \frac{1}{w}$$