

$$y = (a-1)x^2 + x + 3$$

$$x=2 \rightarrow \text{است} \rightarrow \frac{-1}{2(a-1)} = 2$$

$$\downarrow -\frac{1}{2} = a-1 \rightarrow a = \frac{3}{2}$$

$$a = \frac{3}{2} \rightarrow -\frac{1}{2}x^2 + x + 3 = 0 \rightarrow x^2 - 2x - 6 = 0$$

$$(x-6)(x+1) = 0 \rightarrow \begin{cases} x=6 & x \geq 0 \checkmark \\ x=-1 & x < 0 \times \end{cases}$$

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

$$\begin{array}{c|c} x & x_1 \quad x_2 \\ f(x) & - \quad + \quad - \end{array} \rightarrow m < 0 \quad (2)$$

$$\Delta > 0 \rightarrow \begin{cases} 4\omega - 4m^2 > 0 \\ \frac{4\omega}{4} > m^2 \rightarrow -\frac{\omega}{4} < m < \frac{\omega}{4} \quad (1) \end{cases}$$

$$1 \cap 2 \rightarrow -\frac{\omega}{4} < m < 0$$

$$ax^2 + bx + c = 0$$

$$\frac{3-\sqrt{5}}{4}, \frac{3+\sqrt{5}}{4}$$

$$s = 3$$

$$p = \frac{3}{4}$$

$$\begin{cases} x^2 - 3x + \frac{3}{4} = 0 \\ 4x^2 - 12x + 3 = 0 \end{cases}$$

$$\checkmark \alpha^2 \rightarrow \lambda x + m + 1 = 0$$

$$s = -\frac{b}{a} = \frac{4}{1}$$

$$p = \frac{m+1}{1}$$

$$\checkmark \alpha^2 + \beta^2 = 12$$

$$\checkmark \alpha^2 + \alpha^2 + \beta^2 + \beta^2 = 12$$

$$2(s^2 - 2p) + (\alpha - \beta)(s) = 12 \rightarrow 2(4 - 2p) + (\alpha - \beta)(4) = 12$$

$$2(4 - 2p) + 4(\frac{4-\sqrt{5}}{4}) = 12$$

$$8 - 4p + 4 - \sqrt{5} = 12$$

$$12 - 4p - \sqrt{5} = 12$$

$$-4p - \sqrt{5} = 0$$

$$-4p = \sqrt{5}$$

$$p = -\frac{\sqrt{5}}{4}$$

$$\sqrt{5} = m - 1$$

$$\sqrt{4m^2 - 4m + 1} = m - 1$$

$$4m^2 - 4m + 1 = m^2 - 2m + 1$$

$$3m^2 - 2m = 0$$

$$m(3m - 2) = 0$$

$$m = 0 \text{ or } m = \frac{2}{3}$$

$$y = a(x-2)^2 + 9 \quad x=0 \rightarrow 4a+9=\omega \rightarrow a=-1$$

$$\checkmark 3/9$$

$$y = -(x-2)^2 + 9 = -x^2 + 4x - 4 + 9 = -x^2 + 4x + 5$$

$$\checkmark -x^2 + 4x + 5 > 0$$

$$\checkmark -x^2 + 4x + 5 > 0$$

$$\checkmark -x^2 + 4x + 5 > 0$$

$$(x-5)(x+1) < 0 \rightarrow -1 < x < 5$$

$$\begin{array}{c} -1 \quad \omega \\ + \quad - \quad + \\ -1 < x < 5 \end{array}$$

