

$$x'' - \omega x + \gamma = 0$$

$$\alpha\beta = \gamma \Rightarrow \alpha = \frac{\gamma}{\beta}$$

(1)

$$\frac{\gamma\alpha + \beta^{\omega}}{\omega\beta^{\gamma}} \Rightarrow \frac{\gamma\alpha}{\omega\beta^{\gamma}} + \frac{\beta^{\omega}}{\omega\beta^{\gamma}} \Rightarrow \frac{\gamma\alpha}{\omega\beta^{\gamma}} + \frac{\beta^{\omega} \times \beta^{\gamma}}{\omega \times \beta^{\gamma}} =$$

$$\beta^{\gamma} - \omega\beta + \gamma = 0 \Rightarrow \boxed{\beta^{\gamma} = \omega\beta - \gamma} \quad \beta^{\omega} \Rightarrow \beta\beta^{\gamma} = \beta(\omega\beta - \gamma) = \omega\beta^{\gamma} - \gamma\beta$$

$$\omega(\omega\beta - \gamma) - \gamma\beta = \gamma\beta^{\omega} - \gamma\beta$$

$$\beta^{\omega} = \beta^{\gamma} \beta^{\gamma} = (\gamma\beta^{\omega} - \gamma\beta)(\omega\beta - \gamma) = \gamma\gamma\beta^{\omega} - \gamma\gamma\beta$$

$$\left(\frac{\gamma \left(\frac{\gamma}{\beta} \right) + \gamma\gamma\beta - \gamma\gamma}{\omega(\omega\beta - \gamma)} \right) =$$

$$\frac{1 + \gamma\gamma\beta - \gamma\gamma}{\gamma\omega\beta - \gamma\gamma} = \frac{\gamma\gamma(\omega\beta - \gamma) - \gamma\gamma + 1}{\gamma\omega(\omega\beta - \gamma) - \gamma\gamma} = \frac{\gamma\gamma\omega\beta - \gamma\gamma}{\gamma\gamma\omega\beta - \gamma\gamma} \Rightarrow \frac{\gamma\gamma\omega\beta - \gamma\gamma}{\gamma\gamma\omega\beta - \gamma\gamma} = \frac{19(\gamma\gamma\omega\beta - \gamma\gamma)}{\gamma\gamma\omega\beta - \gamma\gamma}$$

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$$K_5 = \frac{\gamma}{\gamma}$$

$$K_5 = \frac{\gamma}{\gamma} \Leftarrow \text{در صورتی که هر دو طرف یکسان باشد. مثل این که در نقطه است.}$$

(2)

$$A \text{ و } B \Rightarrow \text{نقطه میانی} \Rightarrow x = \frac{\gamma + (-\gamma)}{\gamma} = -1 \rightarrow (-1, 1)$$

$$y = a(x+1)^{\gamma} + 1$$

(3)

$$x = 0 \rightarrow y = 0$$

$$a(x+1)^{\gamma} + 1 = 0 \Rightarrow (x+1)^{\gamma} = -\frac{1}{a}$$

$$y = -\frac{\gamma}{\gamma}(x+1)^{\gamma} + 1$$

$$x = 0 \Rightarrow y = -\frac{\gamma}{\gamma}(1) + 1 = \frac{1}{\gamma} \rightarrow \left(0, \frac{1}{\gamma}\right)$$

$$\alpha + \beta = \gamma(1+d) - d \Rightarrow (1+d)^{\gamma} = \frac{\gamma}{\gamma}$$

$$d + d = \frac{\gamma}{\gamma}$$

$$-d = \frac{\gamma}{\gamma} \rightarrow a = \frac{\gamma}{\gamma}$$

$$a = -1$$

$$\Delta = \gamma\omega + \gamma m \geq 0 \rightarrow m \geq -\frac{\gamma\omega}{\gamma} \rightarrow m \geq -\gamma$$

$$\frac{\gamma}{\gamma} < \frac{\gamma}{\gamma}$$

$$\left(-\frac{\gamma}{\gamma}\right)^{\gamma} + \gamma\left(\frac{\gamma}{\gamma}\right) + m = -\frac{\gamma}{\gamma} + \frac{\gamma}{\gamma} + m = \frac{\gamma}{\gamma} + m$$

$$\frac{\gamma}{\gamma} + m < 0 \Rightarrow m < -\frac{\gamma}{\gamma}$$

$$\left(\frac{\gamma}{\gamma}\right)^{\gamma} + \gamma\left(\frac{\gamma}{\gamma}\right) + m = -\frac{\gamma}{\gamma} + \frac{\gamma}{\gamma} + m = \frac{\gamma}{\gamma} + m$$

$$m = -\frac{\gamma}{\gamma} - \gamma - \gamma - \gamma$$

$$m \leq -\gamma$$

(4)

$$y = ax^{\gamma} + bx + c$$

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

$$a = m$$

$$b = -\gamma m$$

$$x = -\frac{-\gamma m}{\gamma m} = \frac{\gamma m}{\gamma m} = \frac{\gamma}{\gamma}$$

$$y_{min} = m\left(\frac{\gamma}{\gamma}\right)^{\gamma} - \gamma\left(\frac{\gamma}{\gamma}\right) + \gamma m - 1 \rightarrow y_{min} = \frac{\gamma}{\gamma} - \frac{\gamma}{\gamma} + \gamma m - 1$$

$$-\frac{\gamma}{\gamma} + \gamma m - 1 = \gamma \Rightarrow \left(-\frac{\gamma}{\gamma} + \gamma m - 1\right)$$

$$\omega m^{\gamma} - \gamma m = \gamma m$$

$$\omega m^{\gamma} - \gamma m - \gamma m = 0$$

$$(am+1)(m-1)=0$$

$$m = -\frac{1}{a}$$

$$m = 1$$

کمترین مقدار را می یابیم

$$\frac{q}{m} \Rightarrow \frac{q}{p} = 4$$

(11)

$$|\alpha - \beta| = \frac{\sqrt{b^2 - 4ac}}{|a|}$$

$$a = 1$$

$$b = 2k$$

$$c = 1$$

$$\Delta = 4k^2 - 4 \Rightarrow |\alpha - \beta| = \sqrt{4k^2 - 4}$$

$$\sqrt{4k^2 - 4} = \frac{4}{p} k \Rightarrow (4k^2 - 4) = \frac{16}{p^2} k^2 \Rightarrow 4k^2 - 4 = 16k^2 - 16 \Rightarrow 12k^2 = 12 \Rightarrow k^2 = 1 \Rightarrow k = 1$$

$$\frac{k^2}{p} = \frac{q}{p} = \left[\frac{1}{p}, a \right] = \left[\frac{1}{p}, 8 \right]$$

$$k^2 = 9$$

$$a, \alpha, \beta \rightarrow a, aq, aq^2$$

$$\alpha + \beta = -2(a+1) \quad aq + aq^2 = aq(1+q) = -2(a+1)$$

$$\alpha\beta = 2a-1 \quad aq \times aq^2 = a^2 q^3 = 2a-1$$

$$q^3 = \frac{2a-1}{a^2}$$

از دو طرف

$$\rightarrow \boxed{a = -\frac{1}{2}} \quad q^3 = -1 \rightarrow q = -1$$

$$aq(1+q) = -1 = -2(a+1)$$

$$x^2 - vx^2 - a = 0$$

$$t^2 - vt - a = 0$$

$$t = \frac{v \pm \sqrt{v^2 + 4a}}{2} \Rightarrow t_1 = \frac{v + \sqrt{v^2 + 4a}}{2}$$

$$t_2 = \frac{v - \sqrt{v^2 + 4a}}{2}$$

$$x^2 = t$$

$$\Delta = 4a + v^2 = 4a$$

$$x^2 = \frac{v + \sqrt{v^2 + 4a}}{2}$$

$$x_{1,2} = \pm \sqrt{\frac{v \pm \sqrt{v^2 + 4a}}{2}}$$

$$S = 0$$

$$P = \frac{v + \sqrt{v^2 + 4a}}{2}$$

$$10^2 - 10^2 + 4 \times 5 = 10^2 = 100 \Rightarrow \left(\frac{100 + 40 + 10\sqrt{40}}{10} \right) = \frac{140 + 10\sqrt{40}}{10} = 14 + \sqrt{40}$$

(12)

$$\frac{x_1}{x_2} = \frac{-b}{ka} = -\frac{-f}{fk} = +\frac{f}{k}$$

$$y = -fx - f \Rightarrow \frac{f+yk}{k} = -f\left(\frac{f}{k}\right) - f \Rightarrow f - yk = -1 - fk \Rightarrow -yk = -1 - 2fk \Rightarrow \boxed{k = 1}$$

$$\frac{y_1}{y_2} = \frac{-\Delta}{fa} = \frac{14 - 2fk}{fk} = -\frac{f + 9k}{k}$$

$$y_{\text{نسبت}} = -\frac{f + 9k}{k} = -\frac{14}{1} = -14$$

$$-mx^2 + mx + 1 = -m - x$$

$$-mx^2 + mx + x + m + 1 = 0$$

$$mx^2 - mx - x - m - 1 = 0 \Rightarrow \frac{m}{-(m+1)} = \frac{1}{-(m+1)}$$

مقادیر $\Delta < 0$

$$\Delta = (m+1)^2 + 4m(m+1) = (m+1)(4m+5)$$

$$(m+1)(4m+5) < 0 \Rightarrow -1 < m < -\frac{5}{4}$$

$$\frac{1}{4} \quad -\frac{5}{4}$$

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