

$$-\frac{\Delta}{ka} = \frac{b^2 + 1^2}{k} = v \Rightarrow b^2 \leq 19 \rightarrow b = \pm 4$$

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$$\text{الف) } q^2 = t \Rightarrow t^2 + 2t + 3 = 0 \rightarrow \Delta = 4 - 12 < 0 \rightarrow \text{فاقد ریشه}$$

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$$\text{ب) } \frac{(k-q)^2}{t} - 2 \frac{(k-q)}{t} - 1 = 0 \Rightarrow t^2 - 2t - 1 = 0 \quad (t-a)(t+3) = 0 \Rightarrow \begin{cases} a=t \\ -3=t \end{cases} \Rightarrow \begin{cases} -q^2 = -v \rightarrow q = \pm \sqrt{v} \\ -q^2 = 1 \text{ غلط} \end{cases}$$

$$\alpha = 2 + \beta \Rightarrow \alpha + \beta = k \rightarrow \beta = 1, \alpha = 3 \Rightarrow \frac{\alpha \cdot \beta}{1 \times 3} = \frac{m}{k} \rightarrow m = 12$$

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$$2\alpha - \beta = k \Rightarrow \alpha + \beta = 2 \rightarrow \alpha \leq 2, \beta \leq 0 \Rightarrow \frac{\alpha \cdot \beta}{0} = \frac{m-1}{3} \rightarrow m = 1$$

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$$\alpha = \frac{1}{\beta} \Rightarrow \frac{\alpha \cdot \beta}{1} = \frac{m^2 - 2}{-m} \Rightarrow m^2 + m - 2 = 0 \quad (m+2)(m-1) = 0 \Rightarrow \begin{cases} -2 \\ 1 \end{cases}$$

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$$\begin{cases} m = -2 \rightarrow 2q^2 + 4q + 2 = 0 \rightarrow \Delta = 0 \text{ غلط} \\ m = 1 \rightarrow -q^2 + 4q - 1 = 0 \rightarrow \Delta > 0 \text{ غلط} \end{cases}$$

$$\alpha \beta = k \Rightarrow \frac{\alpha \cdot \beta}{\frac{k}{\beta^2}} = 3 \rightarrow \beta = \frac{k}{3}, \alpha = \frac{9}{k} \Rightarrow \frac{\alpha + \beta}{\frac{k+9}{12}} = +m \rightarrow m = + \frac{k+9}{12}$$

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$$\alpha = 3\beta \Rightarrow \alpha + \beta = k \rightarrow \beta = 1, \alpha = 3 \Rightarrow \frac{\alpha \cdot \beta}{3} = m$$

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$$\left(\alpha + \frac{1}{\alpha}\right)^3 = \alpha^3 + \frac{1}{\alpha^3} + 3\alpha + \frac{3}{\alpha} \quad , \quad q^2 + 2 \leq vq$$

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$$\frac{q^2 + 2}{\alpha} = \frac{vq}{\alpha} = v \quad \& \left(\alpha + \frac{1}{\alpha}\right)^3 \Rightarrow 3 + 3 = \alpha^3 + \frac{1}{\alpha^3} + 4 \rightarrow \alpha^3 + \frac{1}{\alpha^3} = 0$$

$$-\frac{\Delta}{ka} = \frac{2000}{k_0} = \frac{12\omega}{r} = h_{max} \quad , \quad -10t^2 + \omega t = 0$$

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$$-t^2 + \omega t = 0 \rightarrow t(\omega - t) = 0 \Rightarrow \begin{cases} 0 \\ \omega \end{cases}$$

