

$$-\frac{\Delta}{ka} = \frac{b^2 + 12}{k} = v \Rightarrow b^2 \leq 12 \rightarrow b = \pm 4$$

1- (2)

الف) $9x^2 = t \Rightarrow x^2 + 2x + 3 = 0 \rightarrow \Delta = 4 - 12 < 0 \rightarrow$ فاقد ریشه

2-

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

(3)

$\alpha = 2 + \beta \Rightarrow \alpha + \beta = k \rightarrow \beta = 1, \alpha = 3 \Rightarrow \frac{\alpha \cdot \beta}{1 \times 3} = \frac{m}{k} \rightarrow m = 12$
 $kx^2 - 14x + 12 = 0$
 $\Delta > 0 \checkmark$ (1, 10)

$2\alpha - \beta = k \Rightarrow \alpha + \beta = 2 \rightarrow \alpha = 2, \beta = 0 \Rightarrow \frac{\alpha \cdot \beta}{0} = \frac{m-1}{3} \rightarrow m = 1$
 $kx^2 - 4x = 0$
 $\Delta > 0 \checkmark$ (1, 10)

3-

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

4-

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

(3)

$\alpha\beta = k \Rightarrow \frac{k}{\beta^2} \cdot \beta = 3 \rightarrow \beta = \frac{k}{3}, \alpha = \frac{9}{k} \Rightarrow \alpha + \beta = m \rightarrow m = \frac{k}{3} + \frac{9}{k}$
 $2x^2 - \frac{4k}{3}x + 9 = 0$
 $\Delta > 0 \checkmark$ (1, 10)

(3)

$\alpha = 3\beta \Rightarrow \alpha + \beta = k \rightarrow \beta = 1, \alpha = 3 \Rightarrow \frac{\alpha \cdot \beta}{3} = m$
 $2x^2 - 4x + 3 = 0$
 $\Delta > 0 \checkmark$ (1, 10)

(3)

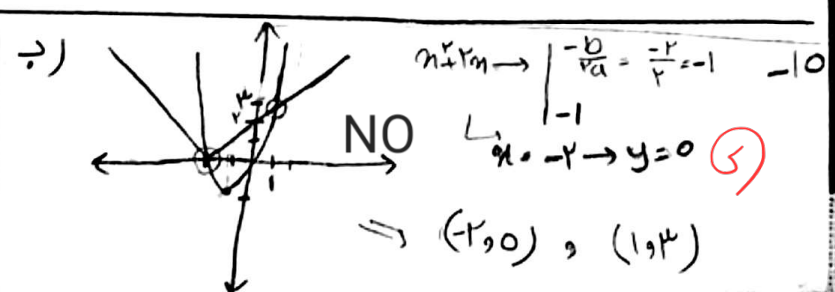
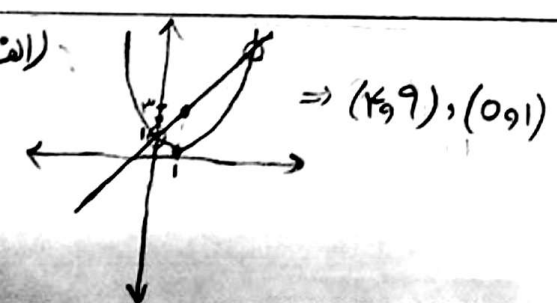
$\left(\alpha + \frac{4}{\alpha}\right)^3 = \alpha^3 + \frac{1}{\alpha^3} + 4\alpha + \frac{12}{\alpha}$, از طرفی $9x^2 + 2 \leq v$
 $\frac{9x^2 + 2}{\alpha} = \frac{v\alpha}{\alpha} = v$
 $4\left(\alpha + \frac{4}{\alpha}\right) \Rightarrow 343 = \alpha^3 + \frac{1}{\alpha^3} + 42 \rightarrow \alpha^3 + \frac{1}{\alpha^3} = 301$

5-

(2)

$-\frac{\Delta}{ka} = \frac{2000}{k_0} = \frac{12\omega}{r} = h_{max}$, $-10t^2 + \omega t = 0$
 $-t^2 + \omega t = 0 \rightarrow t(\omega - t) = 0 \Rightarrow \begin{cases} 0 \\ \omega \end{cases}$

(2)



10-

(3)