

$$\frac{4ac - b^2}{4a} \Rightarrow \frac{-12 - b^2}{-4} = 7 \Rightarrow -12 - b^2 = -28 \Rightarrow b^2 = 16 \Rightarrow b = \pm 4$$

(۲)

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✓ دس ریشه واقعی ندارد  $\Rightarrow \Delta < 0 \Rightarrow t^2 + 2t + 3 \Rightarrow t^2 = t \Rightarrow t^2 - t = 0 \Rightarrow t(t-1) = 0 \Rightarrow t = 0, 1$

(۲)

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ب)  $(x - x^2) = t \Rightarrow x^2 - 2x - 1 = 0 \Rightarrow (x-2)(x+1) \Rightarrow x^2 - x - 2 = 0 \Rightarrow x^2 - x + 2 = 0 \Rightarrow x^2 - x - 2 = 0 \Rightarrow x = -1$   
 $x - x^2 = -3 \Rightarrow x^2 = x + 3 \Rightarrow x^2 - x - 3 = 0 \Rightarrow x = \frac{1 \pm \sqrt{13}}{2}$  ✓

$\alpha$   
 $\beta = \alpha + 2 \Rightarrow \delta = \alpha + \alpha + 2 = 4 \Rightarrow \alpha = 1, \beta = 3 \Rightarrow p = 3 = \frac{m}{4} \Rightarrow m = 12$  ✓

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$\delta = 2 \Rightarrow \alpha + \beta = 2 \Rightarrow -\beta = \alpha - 2 \Rightarrow 3\alpha - 2 = 4 \Rightarrow 3\alpha = 6 \Rightarrow \alpha = 2, \beta = 0$

(۲)

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$p = 0 \Rightarrow \frac{m-1}{4} = 0 \Rightarrow m = 1$  ✓

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

(۲)

$m = 1 \Rightarrow x^2 + 6x - 1 \Rightarrow \Delta > 0 \Rightarrow 14 - 4 = 10 > 0$   
 $m = -2 \Rightarrow x^2 + 6x + 2 \Rightarrow \Delta > 0 \Rightarrow 14 - 12 = 2 > 0$   
 $\left. \begin{array}{l} m = 1 \\ m = -2 \end{array} \right\} m = 1$  ✓

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$$\alpha \beta \cdot \beta = f \Rightarrow \beta = \frac{\varepsilon}{\gamma} \quad \alpha = \frac{9}{\varepsilon} \Rightarrow \delta = \frac{1\gamma + 2\gamma}{1\gamma} = \frac{\varepsilon\gamma}{1\gamma} \quad \checkmark$$

(2)

6

$$\alpha, \beta = \gamma\alpha \Rightarrow \alpha + \gamma\alpha = \varepsilon \Rightarrow \alpha = 1 \quad \beta = \gamma \Rightarrow \beta = \gamma \Rightarrow \boxed{\eta = \gamma} \quad \checkmark$$

(2)

7

$$\alpha \beta = \gamma \Rightarrow \alpha = \frac{\gamma}{\beta} \xrightarrow{\text{multiplication}} \alpha^{\gamma} + \frac{1}{\frac{1}{\beta^{\gamma}}} = \alpha^{\gamma} + \beta^{\gamma} = \delta^{\gamma} - \gamma\delta\beta = (\gamma)^{\gamma} - \gamma(\gamma)(\gamma) \Rightarrow \gamma\varepsilon\gamma - \varepsilon\gamma = \gamma \quad \checkmark$$

(2)

8

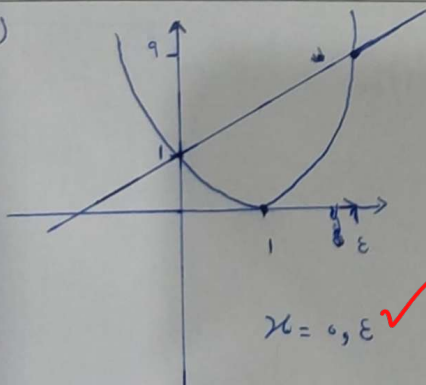
$$\frac{-b}{\gamma a} = \frac{\omega_0}{\gamma_0} = \gamma, \omega \Rightarrow h(\gamma, \omega) = -10(\gamma, \omega)^{\gamma} + \omega \cdot (\gamma, \omega) = -\gamma\gamma, \omega + 12a = \gamma\gamma, \omega \quad \checkmark \text{ mark}$$

(2)

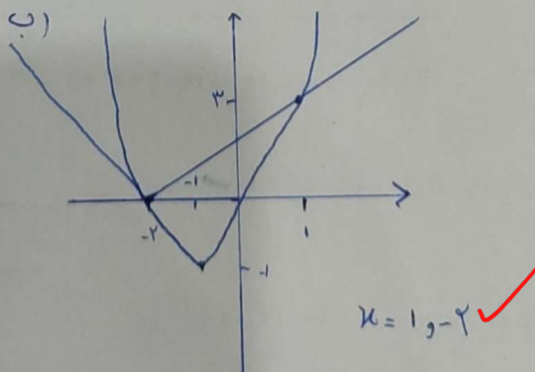
9

$$h(t) = 0 \Rightarrow -10t^{\gamma} + \omega t = 0 \quad -10t(t - \omega) = 0 \Rightarrow \boxed{t = \omega} \quad \checkmark$$

الف)



ب)



(2)

10