

$$\frac{-b^2 - 12}{-4} = 7 \quad b^2 + 12 = 28 \Rightarrow b^2 = 16$$

$$b = \pm 4$$

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الف) $t^2 + 2t + 3 = 0$

$\Delta < 0 \Rightarrow$ بدون جواب

ب) $t^2 - 2t - 15 = 0 \quad (t-5)(t+3)$

$5 - x^2 = 0$

$5 - x^2 = -3$

$x^2 = -1$ جواب ندارد

$x^2 = 8 \Rightarrow x = \pm \sqrt{8}$

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$\alpha + \alpha + 2 = 5 \rightarrow \alpha = 1$
 $\alpha + 2 = 3$

$\frac{m}{2} = 1 \times 3 \Rightarrow m = 12$

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$\frac{3}{2}(\alpha + \beta) + \frac{1}{2}(\alpha - \beta) = 4$

$\frac{3}{2} \times 2 + \frac{1}{2}(\alpha - \beta) = 4$
 $\alpha - \beta = 2$

$\frac{\sqrt{36 - 12(m-1)}}{2} = 2 \Rightarrow 36 - 12m + 12 = 16$
 $m = 1$

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$\frac{m^2 - 2}{-m} = 1$

$m^2 + m - 2 = 0$

$m = 1 \quad m = -2$

$\begin{cases} m = 1 \Rightarrow -x^2 + 5x - 1 = 0 \quad \Delta > 0 \checkmark \\ m = -2 \Rightarrow 2x^2 + 5x + 1 = 0 \Rightarrow \Delta = 0 \quad \checkmark \end{cases}$

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$$\alpha\beta = 1$$

$$\alpha\beta = 1$$

$$\beta = \frac{1}{\alpha} \Rightarrow \alpha = \frac{1}{\beta}$$

$$\alpha + \beta = \frac{1}{\alpha} + \frac{1}{\beta} = \frac{\alpha + \beta}{\alpha\beta}$$

$$m = \frac{1}{\alpha\beta}$$

6

$$\frac{\alpha + \frac{1}{\alpha} = 1}{\alpha = 1}$$

$$m = \frac{1}{\alpha\beta} = 1$$

7

$$\alpha\beta = 1 \Rightarrow \beta = \frac{1}{\alpha} \Rightarrow \beta^{\frac{1}{\alpha}} = \frac{1}{\alpha^{\frac{1}{\alpha}}}$$

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

$$= \frac{1}{\alpha\beta} - \frac{1}{\alpha\beta} \times \frac{1}{\alpha\beta} = \frac{1}{\alpha\beta}$$

8

$$\max H \Rightarrow$$

$$\frac{-\omega_0 \times \omega_0}{\epsilon_X - 1} = 9 \times 10$$

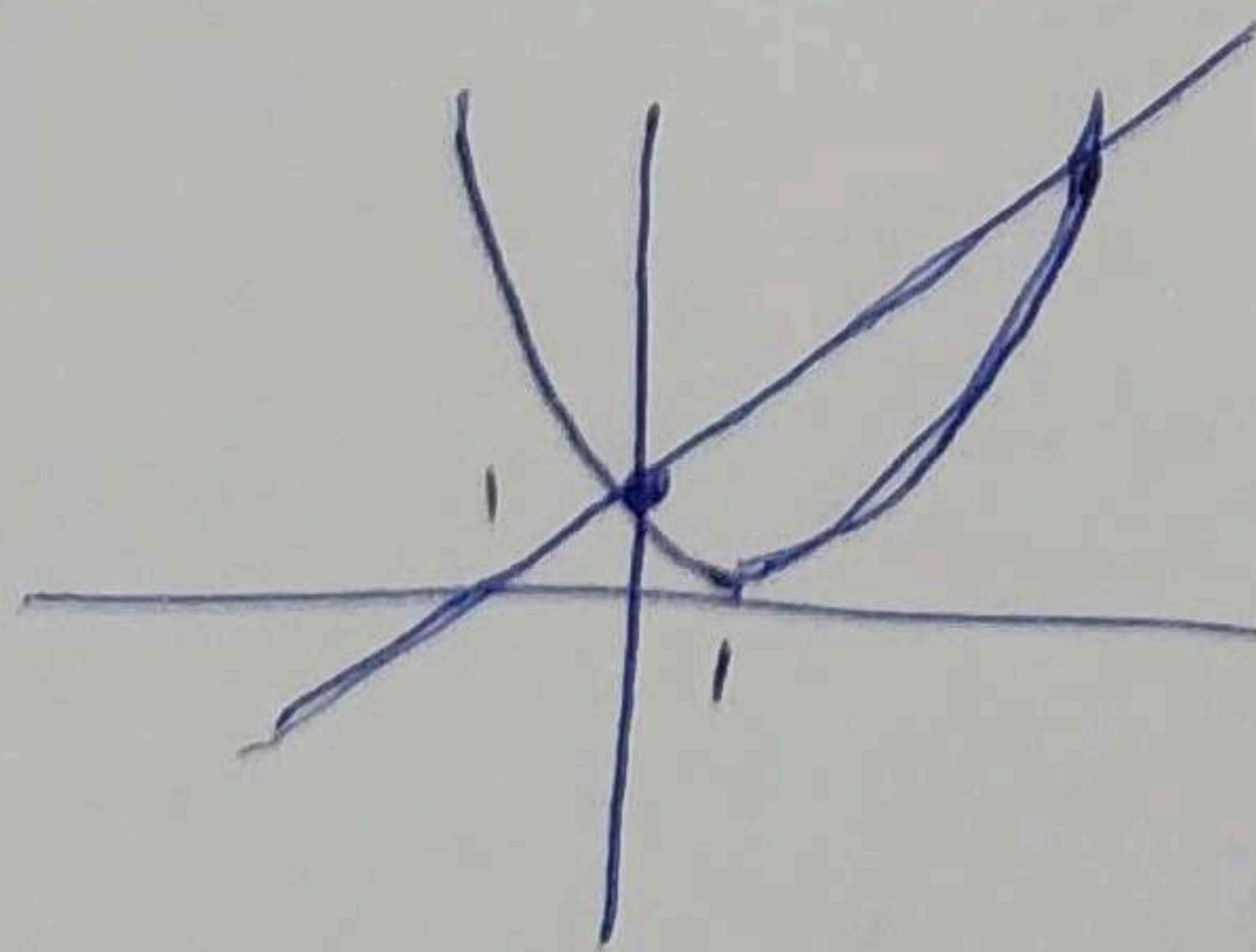
$$-10t^2 + \omega_0 t = 0$$

$$-10t(t - \omega_0) = 0$$

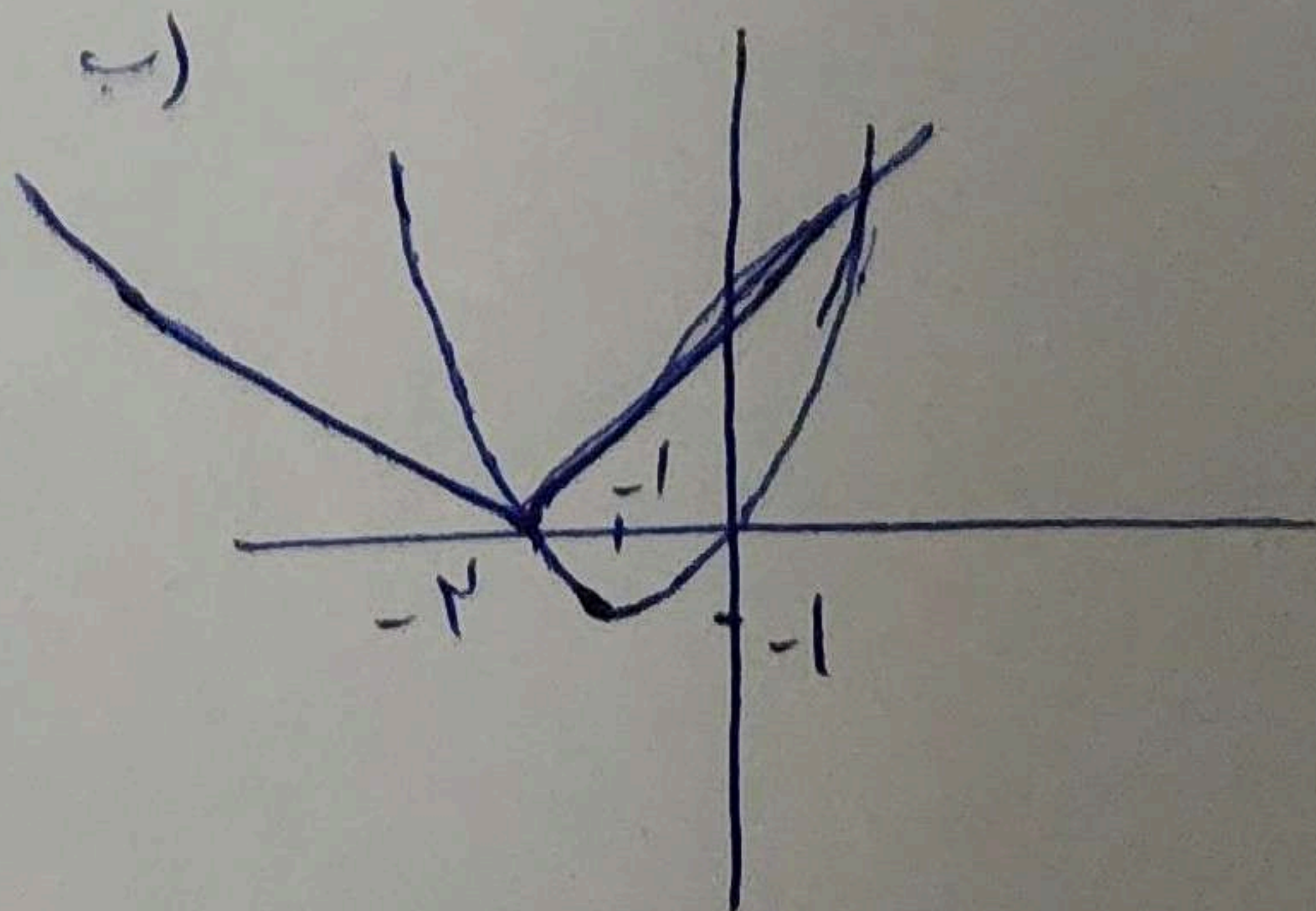
$$t = 0 \text{ or } t = \omega_0$$

9

a)



b)



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