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المسألة ١٤ : إيجاد الحد الأدنى لـ ϵ ، $\epsilon > 0$ ، ϵ صغيراً جداً

$$\frac{\Delta}{\epsilon a} \leq V \rightarrow \frac{f(b^2 + 12)}{f\epsilon} \leq V \rightarrow \frac{b^2 + 12}{\epsilon} \leq V \rightarrow b^2 + 12 \leq \epsilon V$$

$$12 \leq b^2 \rightarrow b \geq \sqrt{12}$$

(الف) $a^2 \leq t \rightarrow t^2 + 2t + 1 \rightarrow \Delta \leq \epsilon - 12 \leq -12 \times$ (٢)

(ب) $\epsilon - a^2 \leq t \rightarrow t^2 + 2t + 1 \leq (\epsilon - a^2)(t + 1) \rightarrow \epsilon - a^2 \leq -12 \times$ (١)

$$\epsilon - a^2 \leq -12 \times \rightarrow \epsilon - a^2 \leq -12 \times \rightarrow \epsilon - a^2 \leq -12 \times$$

(٢) $-a^2 \leq 1 \rightarrow a^2 \leq 1 \times$ (٢)

$\epsilon a^2 - 14a + m \leq 0$ (٣)

المسألة ١٥ : $a, a+1 \rightarrow 5 \leq a+1 \leq \frac{14}{\epsilon} \leq \epsilon \rightarrow 1 \leq a \leq 1$

(١) (٣) $\rightarrow p \leq a^2 + 2a \leq 1 + 2 \leq 3 \leq \frac{m}{\epsilon} \rightarrow m \leq 12$

$a - b \leq \epsilon \rightarrow \frac{1}{\sqrt{2}} a + \frac{1}{\sqrt{2}} a - \frac{1}{\sqrt{2}} b + \frac{1}{\sqrt{2}} b \leq \frac{1}{\sqrt{2}} (a - b) +$ (٤)

$\frac{1}{\sqrt{2}} (a + b) = \frac{1}{\sqrt{2}} \left(\frac{\sqrt{2}}{101} \right) + \frac{1}{\sqrt{2}} \left(-\frac{b}{a} \right) \leq \frac{1}{\sqrt{2}} \left(\frac{\sqrt{-12m+32}}{2} \right) + \frac{1}{\sqrt{2}} \left(\frac{4}{\epsilon} \right) \leq$

$\frac{1}{\sqrt{2}} \left(\frac{\sqrt{-12m+32}}{2} \right) + 1 \rightarrow \sqrt{-12m+32} + 2 \leq \epsilon \rightarrow \sqrt{-12m+32} \leq \epsilon$

$-12m + 32 \leq \epsilon \rightarrow m \leq 1$





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$$c = a \leftarrow q_0 = 1 \leftarrow \text{در این صورت} \quad (5)$$

$$-m \leq m^2 - 2 \rightarrow m^2 + m - 2 \leq 0 \rightarrow (m-1)(m+2) \rightarrow m \leq 1 \checkmark$$

$$\hookrightarrow m \leq -2 \times$$

$$m \leq -2 : 2a^2 + \varepsilon a + 2 \leq 0 \quad \Delta \leq 14 - (4 \times 2 \times 2) \leq 0 \quad \times \quad \text{چون در این صورت}$$

$$\text{مطلوبه نیست}$$

$$m = 1 : -a^2 + \varepsilon a - 1 \leq 0 \quad \Delta \leq 14 - (4 \times 1 \times 1) \leq 12 \checkmark \quad \text{در این صورت مقبول است}$$

$$q \beta^2 \leq \frac{1}{q} \times \beta \leq \varepsilon \rightarrow \beta \leq \frac{\varepsilon}{q} \rightarrow q \left(\frac{14}{q} \right) \leq \varepsilon \rightarrow 14 \leq q \times \varepsilon \quad (6)$$

$$\rightarrow S \leq -b/a \leq m \leq 14/\varepsilon + \varepsilon/q \leq \frac{27 + 14}{12} \leq \frac{41}{12}$$

$$q, 1/q \rightarrow S \leq \varepsilon \leq \varepsilon q \rightarrow 14 \leq 1 \quad (7)$$

$$(1) \text{ و } (3) \rightarrow p \leq m \leq 14 \times 1 \leq 14$$

$$2^2 - 4a + 2 \leq 0 \rightarrow q^2 - 4q + 2 \rightarrow q^2 + 2 \leq 4q \rightarrow q + \frac{2}{q} \leq 4 \quad (8)$$

$$\left(q + \frac{2}{q}\right)^2 \leq q^2 + \frac{4}{q^2} + \underbrace{4q + \frac{12}{q}}_{4\left(q + \frac{2}{q}\right)} \rightarrow q^2 + \frac{4}{q^2} \leq \left(q + \frac{2}{q}\right)^2 - 4\left(q + \frac{2}{q}\right)$$

$$\leq 4 - \varepsilon \leq q^2 + \frac{4}{q^2} \leq 1$$

$$h(t) \leq -10t^2 + 40t \quad \text{مطلوبه: } \frac{-\Delta}{2a} \leq \frac{-20}{-20} \leq 42, 5 \quad (9)$$

توی این زمان می فرود

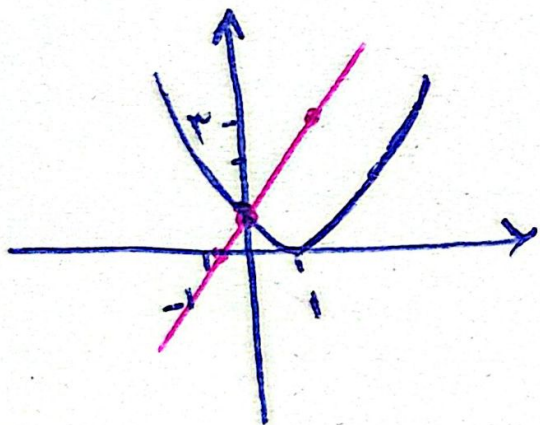
$$\rightarrow -10t^2 + 40t \leq 0 \rightarrow -10t(t-4) \leq 0$$

$$t \leq 0 \quad \text{و} \quad t \leq 4$$

توی ۴ ثانیه به زمین



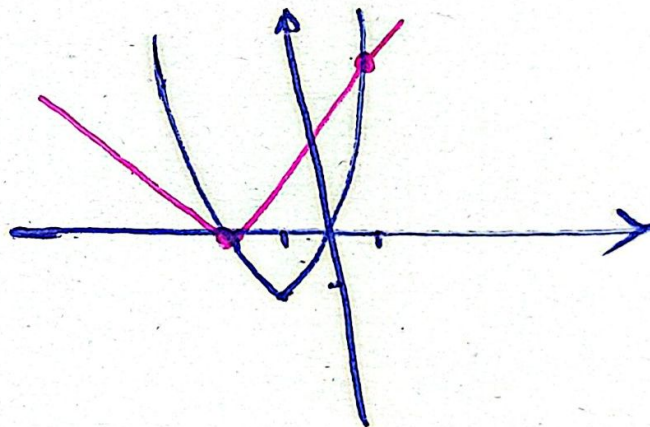
الف) $\underline{(n-1)^2} \leq \underline{2n+1}$



$$n^2 - \varepsilon n \leq 0 \rightarrow n(n - \varepsilon)$$

$\textcircled{0} \leftarrow \textcircled{\varepsilon}$

ب) $\underline{n^2 + 2n} \leq \underline{|n+2|}$



$$n^2 + 2n + 2 \leq 0 \rightarrow (n+1)(n+2) \leq 0$$

$\text{سقف ثنائي} \rightarrow -1 \quad \rightarrow \textcircled{-2}$

$$n^2 + n - 2 \leq 0 \rightarrow (n-1)(n+2) \leq 0$$

$\rightarrow \textcircled{1}$