

Άσκηση 2

Διάγραμμα α

- $t=0 - t=10s \rightarrow$ επιταχυντική ομαλή επιταχυνόμενη κίνηση

$$a = \frac{\Delta v}{\Delta t} = \frac{20-0}{10-0} = \frac{20}{10} = 2 \frac{m}{s^2}$$

$$\Delta x_1 = \text{Εξομύκνση} = \frac{t \cdot v}{2} = \frac{10 \cdot 20}{2} = 200 = 100 \text{ m}$$

- $t=10 - t=20s \rightarrow$ επιταχυντική ομαλή

$$a=0$$

$$v = 20 \frac{m}{s}$$

$$\Delta x_2 = 20 \cdot 10 = 200 \text{ m}$$

$t = 20 - t = 40 \text{ s} \rightarrow$ Δt $\rightarrow$ $\Delta t = 40 \text{ s}$ $\rightarrow$ $\Delta t = 40 \text{ s}$

$$a = \frac{\Delta v}{\Delta t} = \frac{0 - 20}{40 - 20} = -\frac{20}{20} = -1 \text{ m/s}^2$$

$$\Delta x_2 = \text{Exp. 2} = \frac{1}{2} a t^2 = \frac{1}{2} (-1) (20)^2 = -100 \text{ m}$$

$$S_2 = \Delta x_1 + \Delta x_2 + \Delta x_3 = 100 + 200 + 200 = 500 \text{ m}$$

$$v_k = \frac{S_2}{t_2} = \frac{500}{40} = 12.5 \text{ m/s}$$

Διαγράφη 6

- $t=0 - t=10s \rightarrow$ επιβύρραψη οριζ.

$$a = 0$$

$$\Delta Y_1 = 20 \cdot 10 = 200 \text{ m}$$

- $t=10 - t=20s \rightarrow$ επιβύρραψη οριζ. επιβραδύνουσα

$$a = \Delta v = \frac{40 - 20}{20 - 10} = \frac{20}{10} = 2 \text{ m/s}^2$$

$$\Delta t = 20 - 10 = 10 \text{ s}$$

$$\Delta X_2 = \text{Εμβαδόν} = \frac{B+b}{2} \cdot h = \frac{20+40}{2} \cdot 10 = \frac{60}{2} \cdot 10 = 300 \text{ m}$$

- $t=20 - t=40s \rightarrow$ επιβύρραψη οριζ. επιβραδύνουσα

$$a = \Delta v = \frac{20 - 40}{40 - 20} = \frac{-20}{20} = -1 \text{ m/s}^2$$

$$\Delta t = 40 - 20 = 20 \text{ s}$$

$$\Delta X_3 = \text{Εμβαδόν} = \frac{B+b}{2} \cdot h = \frac{20+40}{2} \cdot 20 = \frac{60}{2} \cdot 20 = 600 \text{ m}$$

$$S_{\text{tot}} = \Delta X_1 + \Delta X_2 + \Delta X_3 = 200 + 300 + 600 = 1.100 \text{ m}$$

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Άσκηση 1

$$V_0 = 0$$

επιταχύνεται με: $a = 2 \frac{m}{s^2}$ για $t_1 = 10s$, V_1

$V_1 =$ ελεύθερη για $\Delta t =$

επιβραδύνεται από V_1 μέχρι $V_2 = 0$ με επιβραδύνση
α $5 \frac{m}{s^2}$

Δίνεται $t_{02} = 20s$

α) $\Delta t_3 =$; επιβραδύνεται

$$\bullet V_1 = a_1 \cdot t_1 \Rightarrow V_1 = 2 \cdot 10 = 20 \frac{m}{s}$$

$$\bullet \text{επιβραδ. κίνηση: } V_2 = V_1 - a_2 \cdot \Delta t_3 \Rightarrow$$

$$0 = 20 - 5 \cdot \Delta t_3 \Rightarrow$$

$$5 \Delta t_3 = 20 \Rightarrow \Delta t_3 = 4s$$

$$B) \Delta X_1 = ; \quad , \quad \Delta X_2 = ; \quad , \quad \Delta X_3 = ;$$

$$t_1 + \Delta t_2 + \Delta t_3 = 30$$

$$10 + \Delta t_2 + 4 = 30$$

$$14 + \Delta t_2 = 30$$

$$\Delta t_2 = 30 - 14$$

$$\Delta t_2 = 16$$

$$\Delta X_1 = \frac{1}{2} a_1 \cdot t_1^2 = \frac{1}{2} \cdot 2 \cdot 10^2 = 100 \text{ m}$$

$$\Delta X_2 = v_1 \cdot \Delta t_2 = 20 \cdot 16 = 320 \text{ m}$$

$$\Delta X_3 = v_2 \cdot \Delta t_3 - \frac{1}{2} a_2 \cdot \Delta t_3^2 = 30 \cdot 4 - \frac{1}{2} \cdot 5 \cdot 4^2 =$$

$$120 - 1 \cdot 5 \cdot 16 =$$

$$120 - 80 =$$

$$40 \text{ m}$$

$$40 \text{ m}$$

$$g) S_{0,2} = \Delta X_1 + \Delta X_2 + \Delta X_3 = 100 + 120 + 40 = 260 \text{ m}$$

$$V_f = \frac{S_{0,2}}{t_{0,2}} = \frac{260}{20} = 13 \text{ m/s}$$

