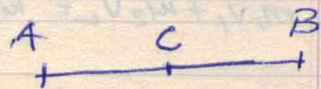


Zgjidhja e tezës së olimpiadës fizike X.
fazë e parë

(I)

$$V_m = \frac{AB}{t_1 + t_2}$$

$$t_1 = \frac{AB}{2V_1}$$



$$CB = V_2 \cdot \frac{t_2}{2} + V_3 \cdot \frac{t_2}{2} \quad \text{Por } CB = \frac{AB}{2}$$

$$\frac{AB}{2} = V_2 \frac{t_2}{2} + V_3 \frac{t_2}{2} \Rightarrow AB = (V_2 + V_3) \cdot t_2 \Rightarrow t_2 = \frac{AB}{V_2 + V_3}$$

$$V_m = \frac{AB}{\frac{AB}{2V_1} + \frac{AB}{V_2 + V_3}} = \frac{1}{\frac{1}{48} + \frac{1}{22}} = \frac{48 \cdot 22}{22 + 48}$$

$$V_m = \frac{264}{175} \approx 15 \text{ km/h}$$

(II)

$$BC = 200 \text{ m} \quad t_{BC} = t_2 = 5 \text{ sekonda}$$

$$BC = V_B \cdot t_2 + g \frac{t_2^2}{2}$$

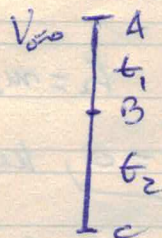
$$V_B = \frac{200 - 125}{5} = \frac{75}{5} = 15 \text{ m/s}$$

$$t_1 = \frac{V_B - V_0}{g} = \frac{15 - 0}{10} = 1.5 \text{ sek}$$

$$t_p = 6.5 \text{ sekonda}$$

$$h = g \frac{t_p^2}{2} = 5 \cdot 6.5^2 = 211.25 \text{ m}$$

$$V_c = g \cdot t_p = 10 \cdot 6.5 = 65 \text{ m/s}$$



(III)

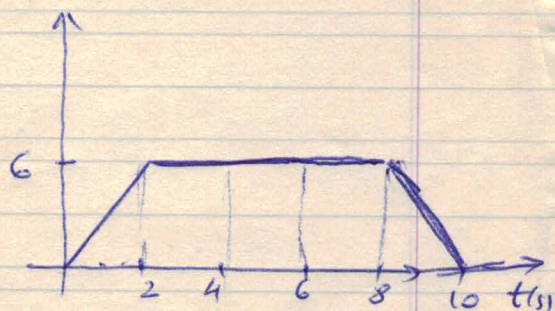
$$s_1 = a_1 \frac{t_1^2}{2} = 3 \cdot \frac{2^2}{2} = 6 \text{ m}$$

$$s_2 = v \cdot t_2 = (a \cdot t_1) \cdot t_2$$

$$s_2 = 36 \text{ m}$$

$$s_3 = \frac{v^2 - v_0^2}{2a_2} = \frac{0 - 6^2}{2 \cdot (-3)} = \frac{36}{6} = 6 \text{ m}$$

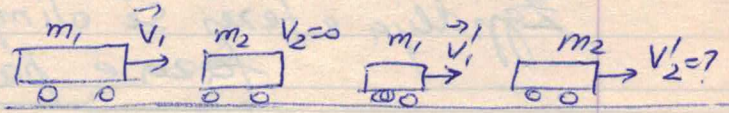
$$S = 48 \text{ m}$$



grafikuat $S = S_{\text{trapezi}} = \frac{(10 + 6) \cdot 6}{2} = 48 \text{ m}$

4v

$$m_1 \vec{v}_1 + m_2 \vec{v}_2 = m_1 \vec{v}'_1 + m_2 \vec{v}'_2$$



$$m_1 v_1 + m_2 v_2 = m_1 v'_1 + m_2 v'_2$$

$$4 \cdot 3 + 0 = 4 \cdot 1 + 2 \cdot v'_2 \quad v'_2 = \frac{12 - 4}{2} = 4 \text{ m/s}$$

v

Shupra në baraspeshtë $M(R)_O = 0$

$$M(F_1)_O = +8 \cdot 2 = 16 \text{ N}\cdot\text{m}$$

$$M(F)_O = 0$$

$$M(W)_O = -4 \cdot 2 = -8 \text{ N}\cdot\text{m}$$

$$M(F_2)_O = -F_2 \cdot 4$$

$$16 - 8 - F_2 \cdot 4 = 0 \Rightarrow F_2 = 2 \text{ N}$$

$$F_2 = m_2 g \Rightarrow m_2 = 0,2 \text{ kg} = 200 \text{ g}$$

$\vec{F}_R = 0$, kushtet i dytë

$$\vec{F}_R = \vec{F}_1 + \vec{F} + \vec{W} + \vec{F}_2 = 0$$

$$-F_1 + F - F_2 - W = 0 \Rightarrow F = W + F_1 + F_2 = 4 + 8 + 2$$

$$\boxed{F = 14 \text{ N}}$$

