5047 pdf (ΑΠΑΝΤΗΣΗ)

ΘΕΜΑ Β

Β1) Α) γ)

Β) $W_1 = \Delta K \Rightarrow W_1 = \frac{1}{2} m(20^2 - 10^2) = 150\,J$

$W_2 = \Delta K \Rightarrow W_2 = \frac{1}{2} m(30^2 - 20^2) = 250\,J$

άρα $W_2 > W_1$

Β2) Α) α)

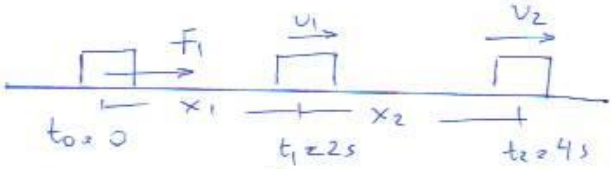
Β) $h_1 = \frac{1}{2} g t_1^2 \xrightarrow{t_1 = 2t_2} h_1 = \frac{1}{2} g 4t_2^2$

$h_2 = \frac{1}{2} g t_2^2 \Rightarrow h_2 = \frac{1}{2} g t_2^2$

$\Rightarrow \frac{h_1}{h_2} = 4$

ΘΕΜΑ Δ

Δ1)



$0 \to t_1$: $\Sigma F = m a_1 \Rightarrow F_1 = m a_1 \Rightarrow a_1 = 1\,m/s^2$

$t_1 \to t_2$: $\Sigma F = m a_2 \Rightarrow F_2 = m a_2 \Rightarrow a_2 = 2\,m/s^2$

Δ2) $x_1 = \frac{1}{2} a_1 t_1^2 \Rightarrow x_1 = 2\,m$

Δ3) $v_1 = a_1 t_1 = 2\,m/s$

$v_2 = v_1 + a_2(t_2 - t_1) = 6\,m/s$

Άλλα $K = \frac{1}{2} m v_2^2 = \frac{1}{2} \cdot 20 \cdot 6^2 = 360\,J$

Δ4) $v_\mu = \frac{S_\Sigma}{t_\Sigma}$

$S_\Sigma = x_1 + x_2 \Rightarrow S_\Sigma = 2 + \underbrace{v_1(t_2 - t_1) + \frac{1}{2} a_2 (t_2 - t_1)^2}_{x_2}$

$S_\Sigma = 10\,m$ και $v_\mu = \frac{10}{4} = 2{,}5\,m/s$