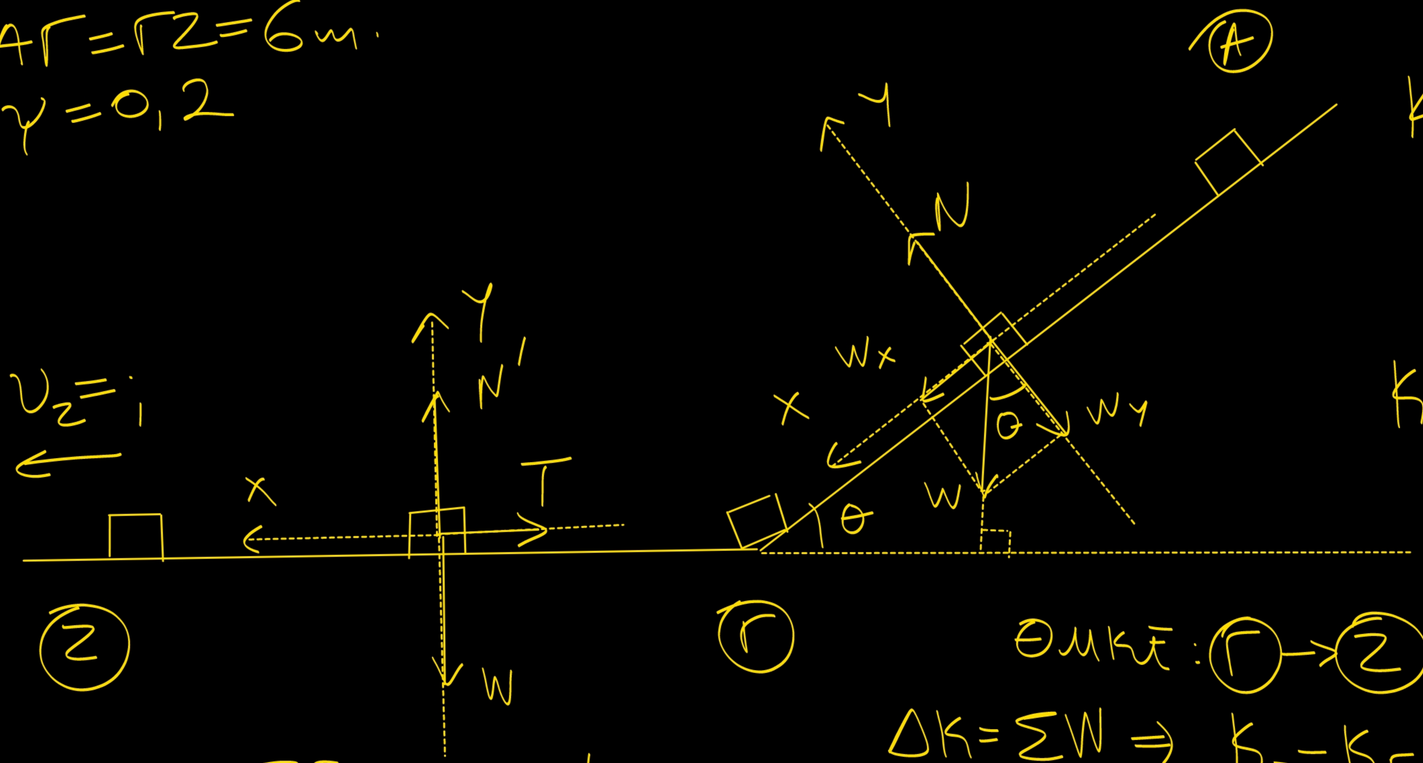
Ασκ. 6 σελ. 193.

$A\Gamma = \Gamma Z = 6\,m$

$\gamma = 0,2$



$\Sigma F_y = 0 \Rightarrow N' = W$

$T = \gamma N' = \gamma W = \gamma \cdot m \cdot g$

Θ.Μ.Κ.Ε. : (A) → (Γ) :

$\Delta K = \Sigma W \Rightarrow$

$K_\Gamma - \cancel{K_A}^{\,0} = W_{W_x} + \cancel{W_{W_y}}^{\,0} + \cancel{W_N}^{\,0} \Rightarrow$

$(\vec{W}_y, \vec{N} \perp \Delta\vec{x})$

$K_\Gamma = W_{W_x} \Rightarrow K_\Gamma = W_x \cdot A\Gamma \Rightarrow$

$K_\Gamma = m \cdot g \cdot \text{συν}\theta \cdot A\Gamma$

Θ.Μ.Κ.Ε. : (Γ) → (Z) :

$\Delta K = \Sigma W \Rightarrow K_Z - K_\Gamma = \cancel{W_W}^{\,0} + \cancel{W_{N'}}^{\,0} + W_T \Rightarrow$

$(\vec{W}, \vec{N}' \perp \Delta\vec{x})$

$K_Z - m \cdot g \cdot A\Gamma \cdot \text{συν}\theta = W_T \Rightarrow K_Z - m \cdot g \cdot A\Gamma \cdot \text{συν}\theta = -T \cdot \Gamma Z$

$$K_2 - m \cdot g \cdot A\Gamma \cdot \sigma\upsilon\theta = -T \cdot \Gamma Z \Rightarrow$$

$$K_2 = m \cdot g \cdot A\Gamma \cdot \sigma\upsilon\theta - \gamma \cdot m \cdot g \cdot \Gamma Z \Rightarrow$$

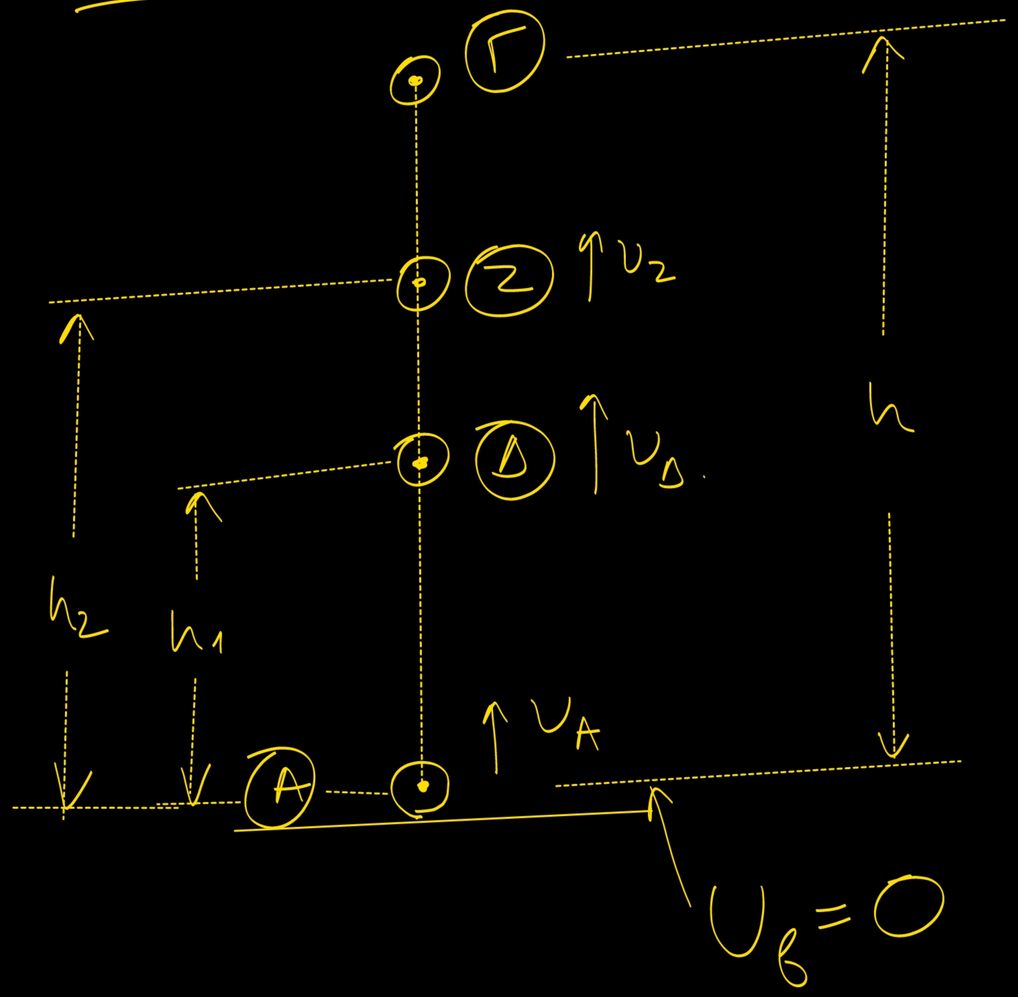
$$\frac{1}{2} m \cdot U_2^2 = m \cdot g \cdot A\Gamma \cdot \sigma\upsilon\theta - \gamma \cdot m \cdot g \cdot \Gamma Z \Rightarrow$$

$$\frac{U_2^2}{2} = g \cdot A\Gamma \cdot \sigma\upsilon\theta - \gamma \cdot g \cdot \Gamma Z \Rightarrow$$

$$\frac{U_2^2}{2} = +10 \cdot 6 \cdot \frac{1}{2} - 0{,}2 \cdot 10 \cdot 6 \Rightarrow$$

$$\frac{U_2^2}{2} = +30 - 12 \Rightarrow \frac{U_2^2}{2} = 18 \Rightarrow U_2^2 = 36 \Rightarrow U_2 = 6 \, m/s$$

Ασκ. 13 (Εξ. 194.)



Α. $h_1 = ;$ $K_\Delta = \frac{K_A}{2}$

ΑΔΜΕ: Α → Γ: $K_A + U_A = K_\Gamma + U_\Gamma \Rightarrow$

$K_A = m \cdot g \, h .$

ΑΔΜΕ: Α → Δ: $K_A + U_A = K_\Delta + U_\Delta \Rightarrow$

$m \cdot g \cdot h + 0 = \frac{K_A}{2} + m \cdot g \cdot h_1 \Rightarrow$

$m \cdot g \cdot h = \frac{m \cdot g \cdot h}{2} + m \cdot g \cdot h_1 \Rightarrow$

$h = \frac{h}{2} + h_1 \Rightarrow 40 = 20 + h_1 \Rightarrow$

$h_1 = 20 m .$

B) Ορμή: $p = m \cdot v$

$$p_2 = \frac{p_A}{2} \Rightarrow m \cdot v_2 = \frac{m \cdot v_A}{2} \Rightarrow v_2 = \frac{v_A}{2}$$

$$K_2 = \frac{1}{2} \cdot m \cdot v_2^2 = \frac{1}{2} \cdot m \cdot \left(\frac{v_A}{2}\right)^2 = \frac{1}{4} \cdot \frac{1}{2} m \cdot v_A^2 \Rightarrow$$

$$K_2 = \frac{1}{4} K_A$$

ΑΔΜΕ: (Α) → (2): $K_A + U_A^{\nearrow 0} = K_2 + U_2 \Rightarrow$

$$K_A = \frac{K_A}{4} + m \cdot g \cdot h_2 \Rightarrow m \cdot g \cdot h = \frac{m \cdot g \cdot h}{4} + m \cdot g \cdot h_2 \Rightarrow h = \frac{h}{4} + h_2 \Rightarrow 40 = \frac{40}{4} + h_2 \Rightarrow$$

$$40 = 10 + h_2 \Rightarrow h_2 = 30\,m$$