

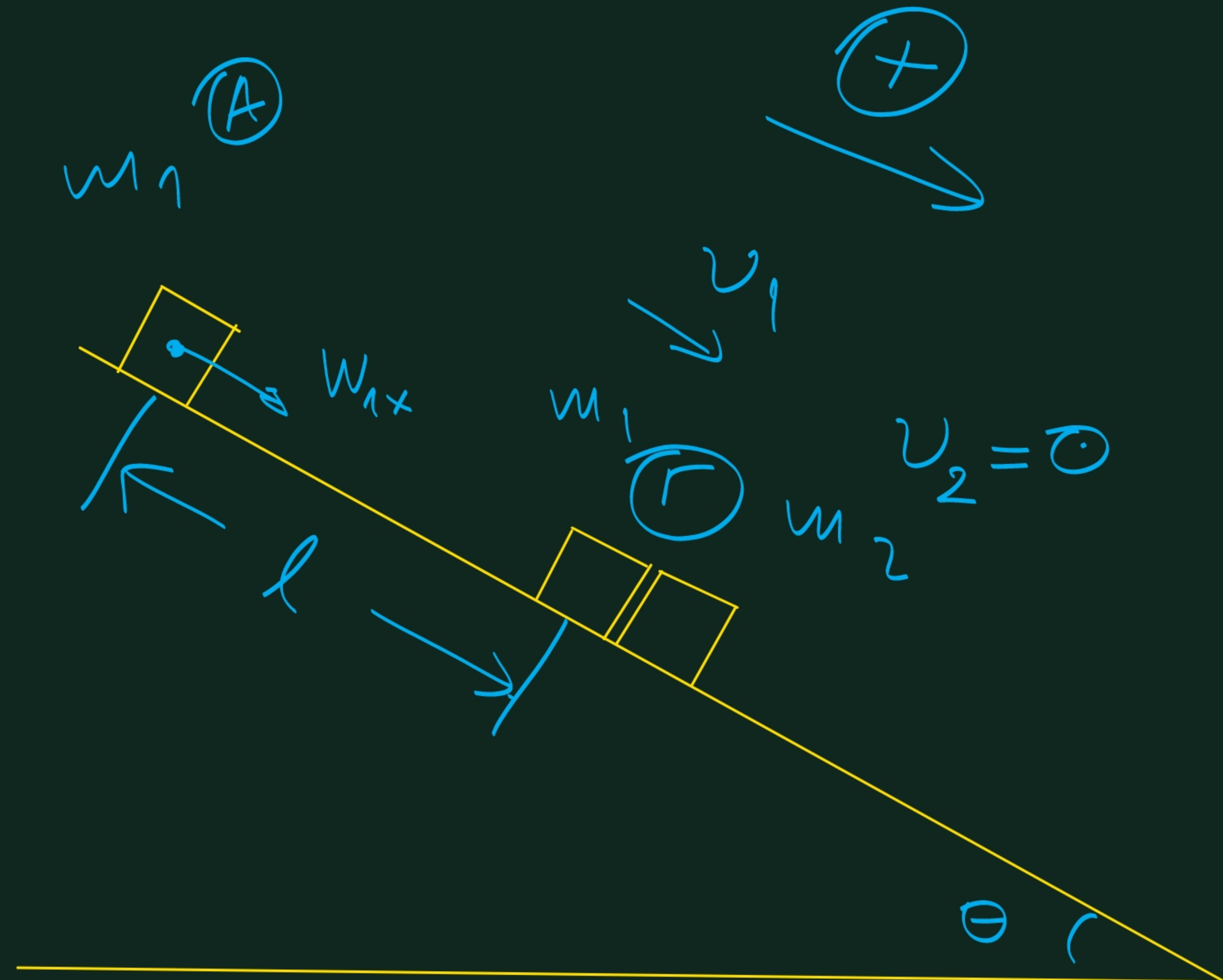
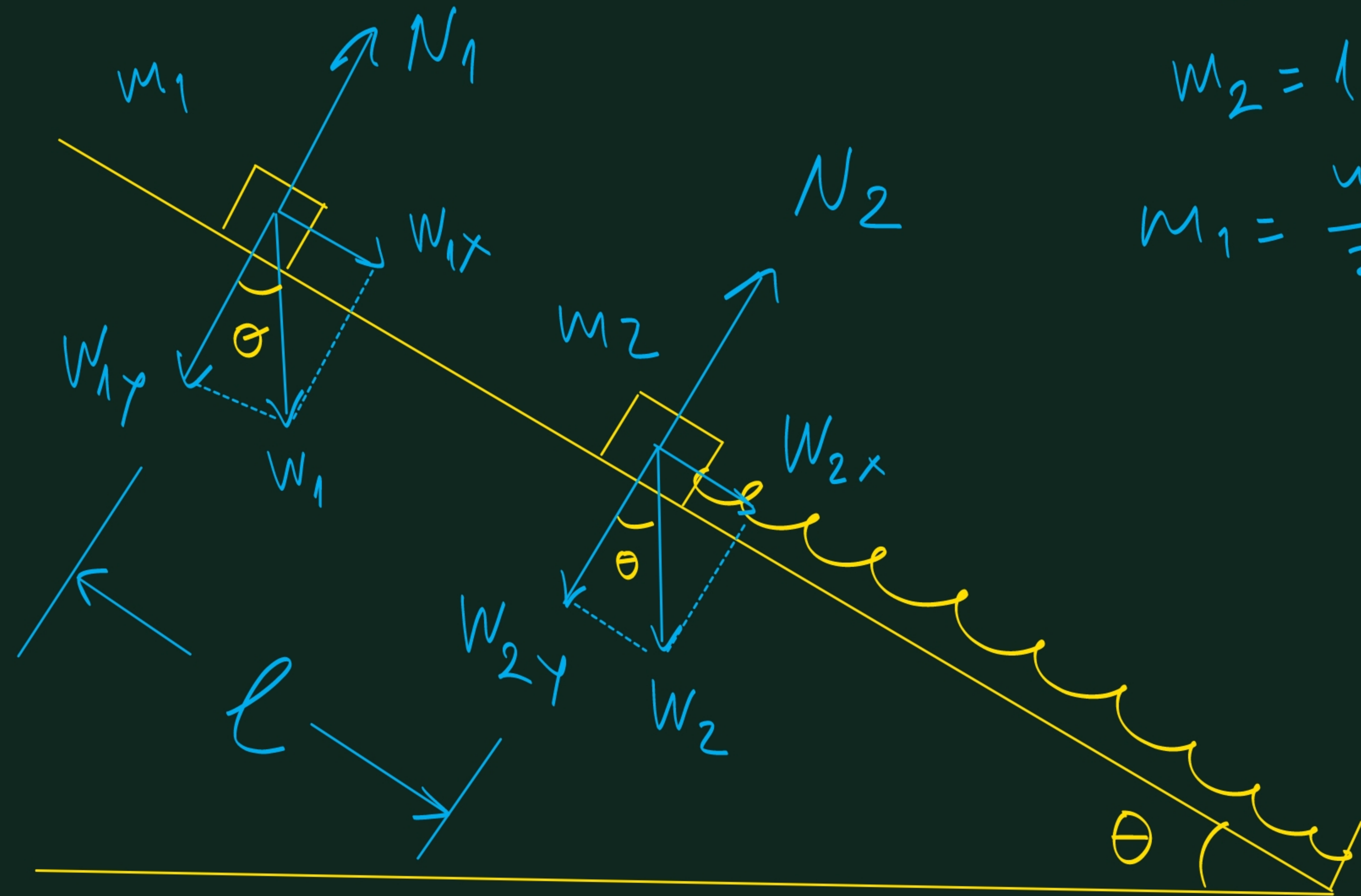
Αδυν. 5.48 (Βιβλίου)

$$k = 200 \text{ N/m}$$

$$\theta = 30^\circ$$

$$m_2 = 1 \text{ kg}$$

$$m_1 = \frac{m_2}{3}$$



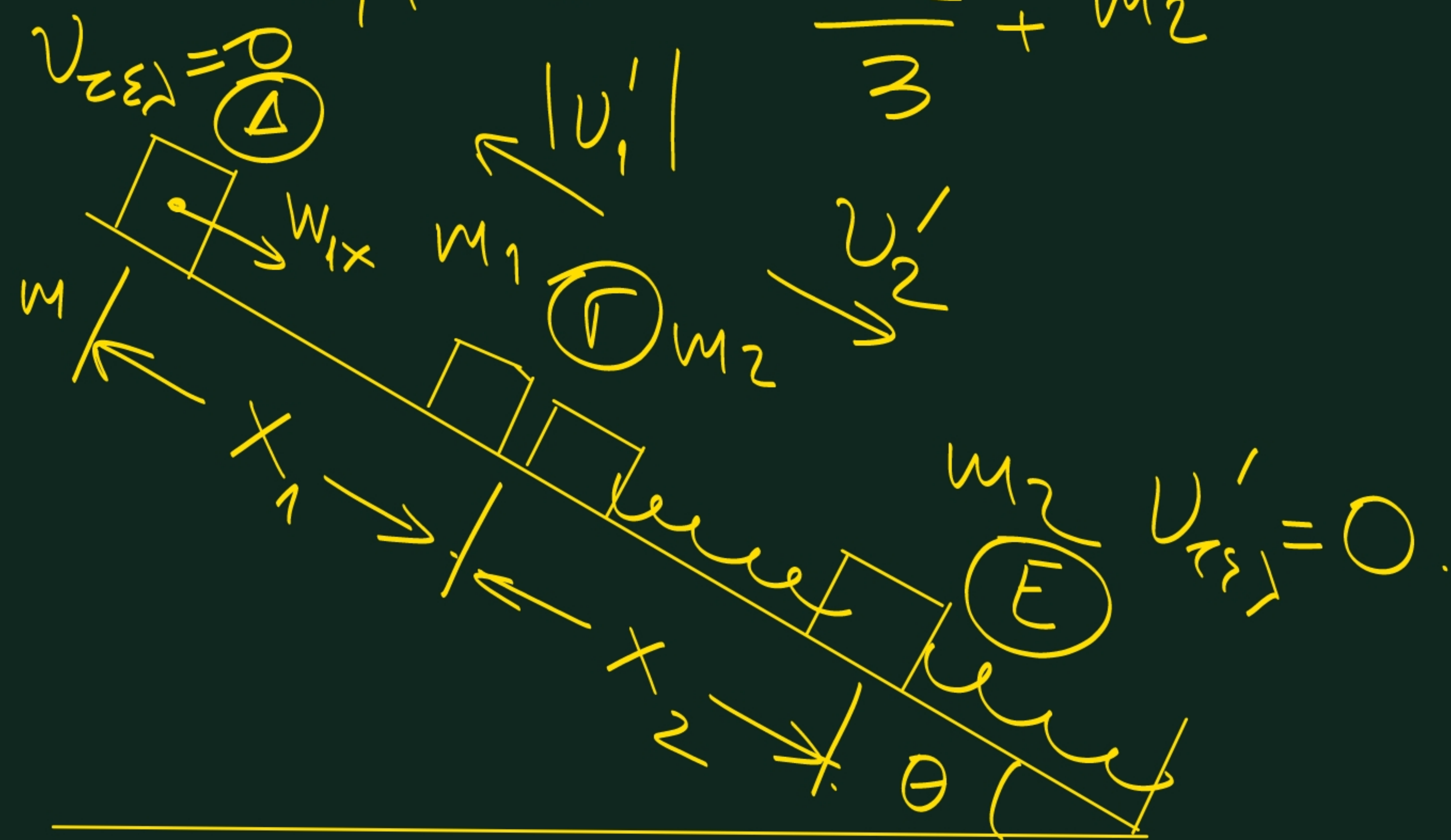
Το m_1 συγκρούεται με το m_2 με ταχύτητα v_1 .

$$\text{ΘΜΚΕ: } \textcircled{A} \rightarrow \textcircled{\Gamma} : \Delta K = \Sigma W \Rightarrow \frac{1}{2} m_1 v_1^2 - 0 = W_{1x} \cdot l \Rightarrow \frac{1}{2} m_1 v_1^2 = m_1 g \sin \theta \cdot l \Rightarrow$$

$$v_1^2 = 2 g l \sin \theta \Rightarrow v_1^2 = 2 \cdot 10 \cdot 4 \cdot \frac{1}{2} \Rightarrow v_1^2 = 40 \Rightarrow v_1 = 2\sqrt{10} \text{ m/s}.$$

$$v_1' = \frac{m_1 - m_2}{m_1 + m_2} v_1 \Rightarrow v_1' = \frac{\frac{m_2}{3} - m_2}{\frac{m_2}{3} + m_2} \cdot 2\sqrt{10} = \frac{-\frac{2}{3}}{\frac{4}{3}} \cdot 2\sqrt{10} = -\sqrt{10} \text{ m/s.}$$

$$v_2' = \frac{2m_1}{m_1 + m_2} v_1 = \frac{2 \cdot \frac{m_2}{3}}{\frac{m_2}{3} + m_2} \cdot 2\sqrt{10} = \frac{\frac{2}{3}}{\frac{4}{3}} \cdot 2\sqrt{10} = \sqrt{10} \text{ m/s}$$

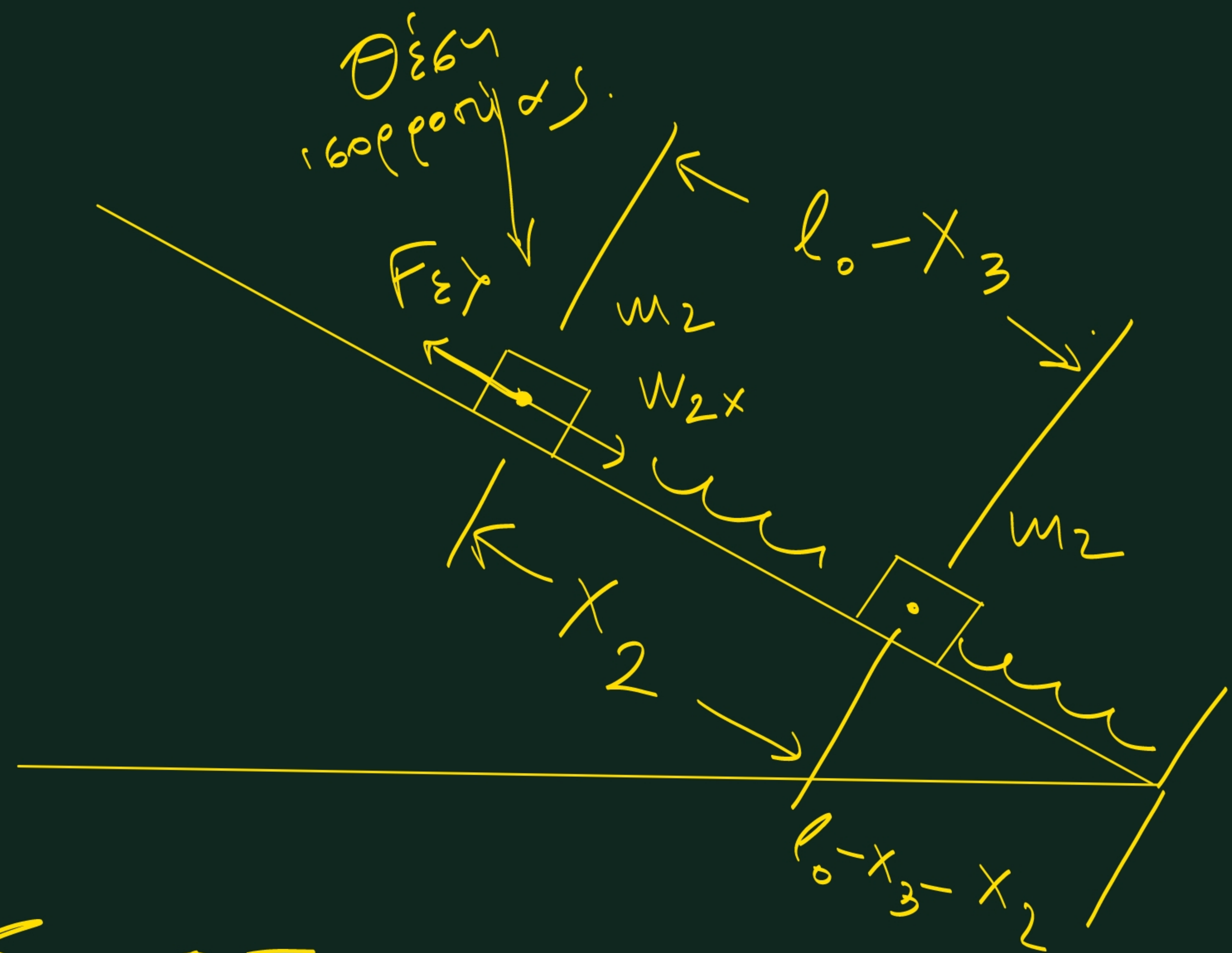


For m_1 : $\text{MKE} : \text{⑤} \rightarrow \text{①}$.

$$\Delta K = \sum W \Rightarrow 0 - \frac{1}{2} m_1 v_1'^2 = -W_{1x} \cdot x_1 \Rightarrow \frac{1}{2} m_1 v_1'^2 = -m_1 g \sin \theta \cdot x_1 \Rightarrow x_1 = \frac{v_1'^2}{2g \sin \theta}$$

$$x_1 = \frac{10}{2 \cdot 10 \cdot \frac{1}{2}} \Rightarrow x_1 = 1 \text{ m (pos)}$$

$\tau \propto n \dot{\alpha} \sin \theta$



Στη ΘΙ του m_2
το ελατήριο είναι συσπρωγμένο
κατά x_3 .

$$W_{2x} = F_{x1} \Rightarrow m_2 g \sin \theta = K x_3$$