

ΑΔΟ-Χ: $m_1 v_{1x} = m_1 v_{2x} \Rightarrow v_1 + \phi = v_2 + \theta \Rightarrow$
 $\Rightarrow \frac{v_1}{v_2} = \frac{\theta + \phi}{\phi} \quad (1)$

1) Συντηρητική Κρούση:

$K_1 = K_2 \Rightarrow \frac{1}{2} m_1 v_1^2 = \frac{1}{2} m_2 v_2^2 \Rightarrow \underline{v_1 = v_2} \quad (2)$

(1)/(2): $1 = \frac{\theta + \phi}{\phi} \Rightarrow \theta + \phi = \phi \Rightarrow \boxed{\theta = \phi}$
Μόλις οι Αντίστοιχοι 200 Νέοι



2) Ανελκτική Κρούση: (ΑΝΘΡΩΠΗ ΕΝΕΡΓΕΙΑΣ)

$K_2 < K_1 \Rightarrow \frac{1}{2} m_1 v_1^2 < \frac{1}{2} m_2 v_2^2 \Rightarrow$

$\Rightarrow v_2^2 < v_1^2 \Rightarrow \underline{v_2 < v_1} \quad (3)$

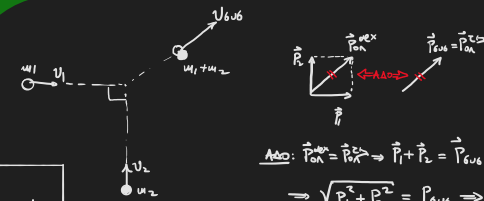
(3): $v_2 < v_1 \Rightarrow 1 < \frac{v_1}{v_2} \xrightarrow{(1)} 1 < \frac{\theta + \phi}{\phi} \Rightarrow \theta + \phi < \phi \xrightarrow{\phi, \theta < 90^\circ} \boxed{\phi < \theta}$



3) Υπερελκτική Κρούση: (ΕΚΚΡΟΗ ΕΝΕΡΓΕΙΑΣ)

$K_2 > K_1 \Rightarrow \dots \Rightarrow \underline{v_2 > v_1} \quad (4)$

(4): $v_2 > v_1 \Rightarrow 1 > \frac{v_1}{v_2} \xrightarrow{(1)} 1 > \frac{\theta + \phi}{\phi} \Rightarrow \theta + \phi > \phi \rightarrow \boxed{\phi > \theta}$



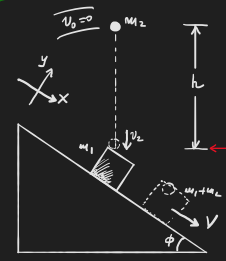
$v_1 = 1 \text{ m/s}$
 $v_2 = \sqrt{3} \text{ m/s}$
 $m_1 = m_2 = 1 \text{ kg}$
 $v_{6.6} = ?$
 $Q = ?$

ΑΔΟ: $\vec{P}_{6.6} = \vec{P}_{6.6}^x = \vec{P}_1 + \vec{P}_2 = \vec{P}_{6.6} \Rightarrow$
 $\Rightarrow \sqrt{P_1^2 + P_2^2} = P_{6.6} \Rightarrow$
 $\Rightarrow \sqrt{m_1^2 v_1^2 + m_2^2 v_2^2} = (m_1 + m_2) v_{6.6} \Rightarrow$
 $\Rightarrow \sqrt{1^2 \cdot 1^2 + 1^2 \cdot 3^2} = (1+1) \cdot v_{6.6} \Rightarrow$
 $\Rightarrow 2 = 2 \cdot v_{6.6} \Rightarrow \boxed{v_{6.6} = 1 \text{ m/s}}$

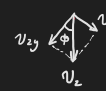
$Q = |\Delta K| = |K_{6.6} - (K_1 + K_2)| =$
 $= \left| \frac{1}{2} (m_1 + m_2) v_{6.6}^2 - \left(\frac{1}{2} m_1 v_1^2 + \frac{1}{2} m_2 v_2^2 \right) \right| =$
 $= \left| \frac{1}{2} (1+1) 1^2 - \left(\frac{1}{2} \cdot 1 \cdot 1^2 + \frac{1}{2} \cdot 1 \cdot 3^2 \right) \right| =$
 $= \left| 1 - \left(\frac{1}{2} + \frac{9}{2} \right) \right| = |1 - 5| = \boxed{4 \text{ Joules}}$

Δ4/2020

$\phi = 30^\circ$
 $m_1 = 1 \text{ kg}$
 $m_2 = 3 \text{ kg}$
 $V = \frac{3\sqrt{3}}{4} \text{ m/s}$
 $g = 10 \text{ m/s}^2$
 $v_2 = ?$
 $h = ?$



ΑΔΜΕ: $m_2 g h = \frac{1}{2} m_2 v_2^2 \Rightarrow h = \frac{v_2^2}{2g} \quad (1)$



ΑΔΟ-Χ: $m_2 v_{2x} = (m_2 + m_1) V \Rightarrow$
 $\Rightarrow m_2 v_2 \cdot \phi = (m_2 + m_1) \cdot V \Rightarrow$
 $\Rightarrow v_2 = \frac{(m_2 + m_1) \cdot V}{m_2 \cdot \phi} \Rightarrow$
 $\Rightarrow v_2 = \frac{(1+3) \cdot \frac{3\sqrt{3}}{4}}{3 \cdot \frac{1}{2}} = \frac{3\sqrt{3}}{3/2} \Rightarrow \boxed{v_2 = 2\sqrt{3} \text{ m/s}}$

(1): $h = \frac{(2\sqrt{3})^2}{2 \cdot 10} = \frac{12}{20} \Rightarrow$
 $\Rightarrow \boxed{h = 0,6 \text{ m}}$