

KE lost
KE before

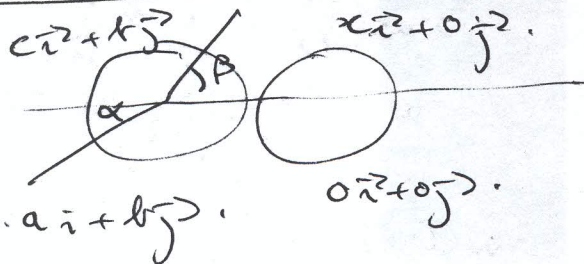
$$\frac{1}{2} m u^2 + \frac{1}{2} m 0^2 = \frac{1}{2} m u^2 = .5 m u^2$$

KE after

$$\begin{aligned} & \frac{1}{2} m |v_1|^2 + \frac{1}{2} m |v_2|^2 \\ &= \frac{1}{2} m u^2 + \frac{1}{2} m v^2 \\ &= \frac{1}{2} m \left(\frac{u\sqrt{35}}{10} \right)^2 + \frac{1}{2} m \left(\frac{u\sqrt{35}}{10} \right)^2 \\ &= m \frac{u^2 (35)}{100} \\ &= .35 m u^2 \end{aligned}$$

$$\begin{aligned} \Rightarrow \Delta KE &= .5 m u^2 - .35 m u^2 \\ &= .15 m u^2 \end{aligned}$$

Q2



$$\cos \alpha = \frac{5}{\sqrt{35}} \quad \cos \beta = \frac{3}{7}$$

$$\Rightarrow \frac{\sqrt{35}}{5} \cdot \sqrt{10} \quad \frac{7}{3} \cdot \sqrt{40}$$

NLR:

$$\begin{aligned} 0 - a &= -c - c \\ \Rightarrow a &= \frac{4}{10} (x - c) \end{aligned}$$

$$\begin{aligned} PCM \Rightarrow m(a) + m(b) &= m(c) + m(k) \\ \Rightarrow a &= c + x \end{aligned}$$

$$\begin{aligned} \frac{4}{10} (x - c) &= c + x \\ 4x - 4c &= 10c + 10x \\ -6x &= 14c \\ -\frac{3}{7} x &= c \end{aligned}$$

$$\Rightarrow a = -\frac{3}{7} x + x \Rightarrow a = \frac{4}{7} x$$

$$\begin{aligned} x &= \frac{7}{4} a \\ c &= -\frac{3}{4} a \end{aligned}$$

(BOARD)