

$$\vec{F} = \vec{P} = m \cdot \vec{g}$$

$$\rightarrow L_{I_1} = \int_A^B m \vec{g} \cdot d\vec{e}_1 = m g e_1 \quad \vec{AB}$$

$$L_{I_2} = \int_A^C m \vec{g} \cdot d\vec{e}_2 + \int_C^B m \vec{g} \cdot d\vec{e}_3$$

$$= \int_A^C m \vec{g} \cdot d\vec{e}_2 = \int_A^C m g d e_2 \cos \alpha$$

$$\rightarrow g \cdot d e \cos(\theta) = 0$$

$$\hookrightarrow d e_1$$

$$\stackrel{x}{=} \int_A^C m g d e_1 = m g e_1 \quad QED$$

