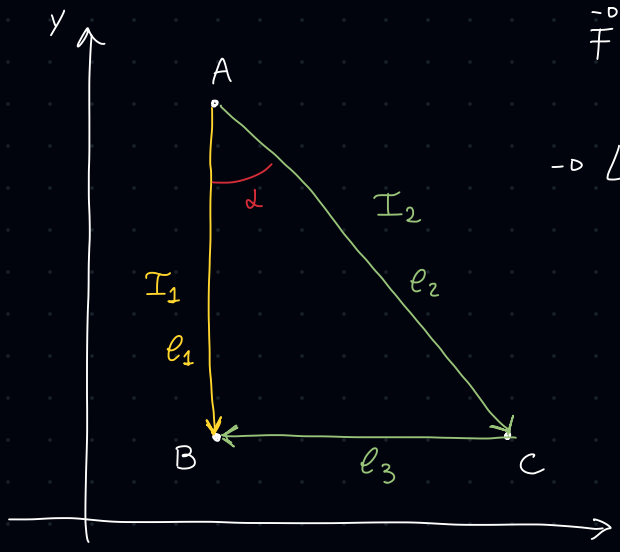

$$\vec{F} = \vec{P} = m \cdot \vec{g}$$

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

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

$$\rightarrow \vec{g} \cdot d\vec{e}\,(\cos(\theta)) = 0$$

$$= \int_A^C m\vec{g}\, d\vec{e}_2 = \int_A^C mg\, de_2 \cos\alpha$$

$$\hookrightarrow de_1$$

$$\Rightarrow \int_A^C mg\, de_1 = mge_1 \quad \text{QED}$$