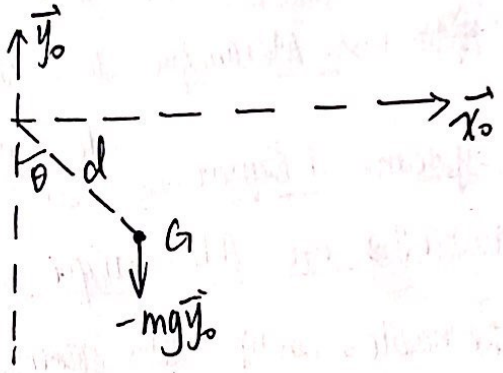
Devoir no.1



力.

$E_c = \frac{1}{2} I \cdot \dot{\theta}^2$

$E_p = -mgd\cos\theta + Cte$

$\delta W = 0$ car il n'y a pas d'efforts qui dérivent pas d'un potentiel

Alors on a:

$$\delta \mathcal{L} = \delta W - \sum_{i=1}^{N} \frac{\partial E_p}{\partial x_i} \cdot \delta x_i$$

$$= 0 - \frac{\partial}{\partial \theta} \cdot (-mgd\cos\theta + Cte) \cdot \delta\theta$$

$$= -mgd\sin\theta \cdot \delta\theta$$

$$\delta A = \left(\frac{d}{dt} \left[\frac{\partial \cdot (\frac{1}{2} I\dot{\theta}^2)}{\partial \dot{\theta}} \right] - \frac{\partial (\frac{1}{2} I\dot{\theta}^2)}{\partial \theta} \right) \times \delta\theta$$

$$= \left(\frac{d}{dt} \cdot (I\dot{\theta}) - 0 \right) \times \delta\theta$$

$$= I\ddot{\theta}\,\delta\theta$$

$$\delta A = \delta \mathcal{L} \Leftrightarrow -mgd\sin\theta\,\delta\theta = I\ddot{\theta}\,\delta\theta$$

$$\Leftrightarrow \boxed{-mgd\sin\theta = I\ddot{\theta}}$$