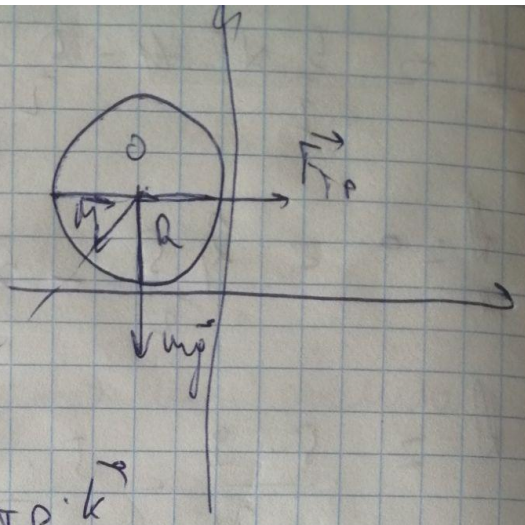

$$dA = (\vec{M}_{тр} \cdot d\vec{\varphi})$$

$$\vec{M}_{тр} = M_{тр} \cdot \vec{k}$$

$$d\vec{\varphi} = d\varphi \cdot \vec{k}$$

$$dA = (M_{тр} \cdot \vec{k}, d\varphi \cdot \vec{k}) = M_{тр} \cdot d\varphi,$$

где $M_{тр} = I \cdot \frac{d\omega_0}{dt}$

$$dA = I \cdot \frac{d\omega}{dt} \cdot d\varphi = I \omega \cdot d\omega =$$

$$\omega_0 \geq \omega \geq 0$$

$$A = \int dA = \int_{\omega_0}^{0} I\omega \, d\omega = -I \frac{\omega_0^2}{2} =$$

$$= -\frac{1}{2} \cdot \frac{m R^2 \cdot \omega_0^2}{2} = -\frac{m R^2 \cdot \omega_0^2}{4}$$