

$$\omega = \omega_0 + \alpha t \Rightarrow \omega_f = \omega_i + \alpha t$$

$$\omega_f = 0 + 2 \times 20 = 40 \text{ rad/s}$$

$$W_{\text{rot}} = \frac{1}{2} \times 3 \times (40)^2 - \frac{1}{2} \times 3 \times 0^2$$

$$= \frac{1}{2} \times 3 \times 1600$$

$$W_{\text{rot}} = 2400 \text{ J}$$

Example: When 100 J of work is done on a flywheel,
its angular speed increases from 60rpm to 180rpm.
Calculate its moment of inertia. [Ans: 0.633 kg-m²]