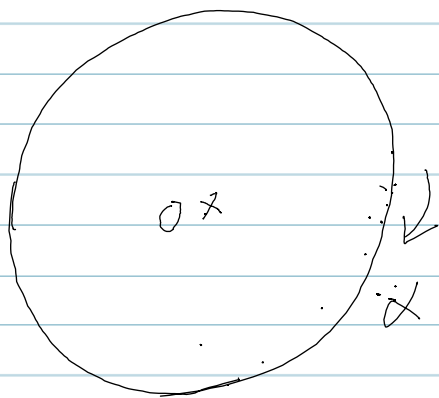


如圖一車輪繞固定軸作順時針方向旋轉。今以一固定的力矩 τ 作用於車輪，使車輪從靜止共轉了20轉，角速度變為20轉/秒，若不計摩擦力所產生的力矩，且車輪的轉動慣量 I 為20 kg-m²，求作用於車輪之力矩的大小。



$$\tau = I\alpha$$

$$\omega_0 = 0$$

$$\begin{aligned}\omega_f &= 2\pi f \\ &= 2\pi \times 20 \\ &= 40\pi\end{aligned}$$

$$\begin{aligned}\theta &= 2\pi \times n = 2\pi \times 20 \\ &= 40\pi\end{aligned}$$

$$\begin{aligned}\omega_f^2 &= \omega_0^2 + 2\alpha\theta \\ (40\pi)^2 &= 0 + 2\alpha \times 40\pi \\ 1600\pi^2 &= 2\alpha \times 40\pi \\ 20\pi &= \alpha\end{aligned}$$

$$\tau = I\alpha = 20 \times 20\pi = 400\pi = 1256 \text{ (N-m)}$$