

Ch. 10 Worksheet

1. A wheel has a constant angular acceleration of 3.0 rad/s^2 . During a certain time interval, it turns through an angle of 120 rad . Assuming that the wheel started from rest, what is the angular velocity of the wheel, in rev/s , at the end of this interval and how long did it take to rotate through the 120 rad ?

2. Calculate the rotational inertia of a wheel that has an initial kinetic energy of $24,400 \text{ J}$ when rotating at 602 rev/min . How much work is required to accelerate the wheel such that the final rotational velocity is 820 rev/min ?

3. A uniform cylinder of radius 10.0 cm and mass 20.0 kg is mounted so as to rotate freely about a horizontal axis that is parallel to and 5.00 cm from the central longitudinal axis of the cylinder. (a) What is the rotational inertia of the cylinder about the axis of rotation? (b) If the cylinder is released from rest with its central longitudinal axis at the same height as the axis about which the cylinder rotates, what is the angular speed of the cylinder as it passes through its lower position?