Name_____

Phys 2010 (NSCC), Fall 2005
Problem Set #10

1. Convert 25.6 rad to: (a) Degrees (b) Revolutions.

2. A wheel has a radius of 4.1 m. How far does a point on the circumference travel if the wheel is rotated through angles of (a) 30 radians (b) 30 degrees (c) 30 revolutions.

3. A potter's wheel moves from rest to an angular speed of $0.20\,\frac{\text{rev}}{\text{s}}$ in 30 s. Find its angular acceleration in $\frac{\text{rad}}{\text{s}^2}$.

4. A machine part rotates at an angular speed of $0.60\,\frac{\text{rad}}{\text{s}}$; its speed is then increased to $2.2\,\frac{\text{rad}}{\text{s}}$ at an angular acceleration of $0.70\,\frac{\text{rad}}{\text{s}^2}$. Find the angle through which the part rotates before reaching this final speed.

5. What is the tangential acceleration of a bug on the rim of a 25.0-cm diameter disk if the disk moves from rest to angular speed of 78 $\frac{\text{rev}}{\text{min}}$ in 3.0 s?

6. In Problem 5, when the disk is at its final speed, what is the tangential velocity of the bug?

7. A circular disk with a radius of 0.15 m rolls without slipping on a level surface with an angular speed of $2.0\,\frac{\text{rad}}{\text{s}}$. What is the speed of the center of mass of the disk?

8. Calculate the net torque on the beam shown at the right about the point C.