**Angular Motion Problem Set #1**

1. The two pulleys have radii 20 cm and 6 cm, respectively. The smaller pulley rotates 30 times in 12 seconds. Find the angular speed of each pulley in radians per second.
2. A thread is being pulled off a spool at the rate of 75 cm per sec. Find the radius of the spool if it makes 110 revolutions per min
3. A pulley has a radius of 15 cm. Suppose it takes 25 sec for 75 cm of belt to go around the pulley. Find the linear speed of the belt in centimeters per second. Find the angular speed of the pulley in radians per second.
4. The linear speed of a point 15.3 cm from the center of a phonograph record is 17π cm/sec. What is the angular speed of the record in rad/sec?
5. Find to the nearest cm/sec the linear speed of a point on the rim of a wheel of radius 24 cm turning at an angular speed of 17π/12 rad/sec.
6. If a wheel with a 16 inch diameter is turning at 12 rev/sec, what is the linear speed of a point on its rim in ft/min?
7. To the nearest revolution, how many times will a bicycle wheel measuring 26 inches in diameter turn if it is ridden for one mile?
8. How far does the tip of a minute hand on a clock move in 40 minutes if the minute hand has a length of 25 cm.
9. An old record player rotates clockwise at 33 1/3 rpm (revolutions per minute).
   1. What is its angular velocity in rad/s?
   2. Find the period of a record that is rotating at 45 rpm.
10. If a bike wheel of radius 50 cm rotates at 300 rpm what is its angular velocity and what is the linear speed of a point on the outer edge of the wheel.
11. A hard drive in a computer rotates at 3600 rpm, if it comes to a crashing halt in 9 s, what is the angular acceleration of the hard drive?
12. A sphere, disk, and hoop all have equal masses and radii. They are started from rest at the top of a hill, and then they are released at the same time. Which one will get to the bottom last?