Physics 50
Uniform Circular Motion Problems

1. An earth satellite moves in a circular orbit of 640 km above earth's surface with a period of 98.0 min.
    a) Calculate the speed of the satellite.
    b) Calculate acceleration of the satellite.

2. A rotating fan completes 1200 revolutions every minute. Consider the tip of the blade, at a radius of 0.15 m.
    a) Calculate the distance the tip of the blade moves in one revolution.
    b) Calculate the tip's speed.
    c) Calculate the tip's acceleration.
    d) Calculate the period of rotation.

3. A particle moves horizontally in uniform circular motion, over a horizontal x-y plane. At one instant it moves through the point (4.0 m, 4.0 m) with a velocity of -5.00 **i** ()m/s and an acceleration of +1.25 **j** (m/s^2). Calculate the coordinates of the center of the circular path.

4. a) Calculate the magnitude of the centripetal acceleration of an object on Earth's equator due to the rotation of the earth.
    b) What should be the earth's period of rotation so that an object on the equator have a centripetal acceleration of 9.8 m/s^2?