

**Assignment 7**  
**Noninertial Reference Frames**

1. Calculate the centrifugal acceleration due to the Earth's rotation on a particle on the surface of the Earth at the equator. Compare this result with the gravitational acceleration. Compute also the centrifugal acceleration due to the motion of the Earth about the sun. How does this compare with the acceleration caused by the Earth's axial rotation?
  
2. If a particle is projected vertically upward to a height  $h$  above a point on the Earth's surface at a northern latitude  $\lambda$ , show that it strikes the ground at a point  $\frac{4}{3} \omega \cos \lambda (8 h^3 / g)^{1/2}$  to the west. Neglect air resistance and consider only small vertical heights.