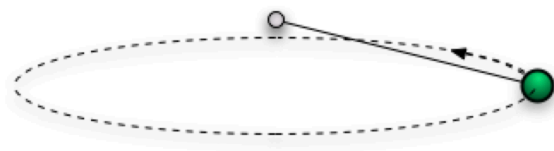


Physics I

Chapter 5 Assignment 1



1. Sketch a force diagram for the tether ball in the position shown in the diagram above.
2. The Air Force trains fighter pilots in a centrifuge. The accelerations that the pilots experience range up to 10 g's, which is 98 m/s^2 . If the seat in which the pilots sit is at a radius of 12 m from the axis of the centrifuge, at what speed is the pilot moving when the acceleration is 10 g's?
3. An object revolves in a circle with an acceleration of 8 m/s^2 .
 - (a) What is its acceleration if the radius is doubled without changing the speed of the object?
 - (b) What is its acceleration if its speed is doubled without changing the initial radius of its path?



4. Take a loop on the 60' tall Ring of Fire. Passengers are secured safely with over the shoulder harnesses and seat belts.
 - (a) Sketch a qualitative force diagram for one of the people at the very tip top of this ride, assuming that they are traveling faster than necessary to prevent their harnesses and seat belts from having to hold them in their seats.
 - (b) At least how fast must the passengers be moving so that their harnesses and seat belts do not have to hold them in their seats?