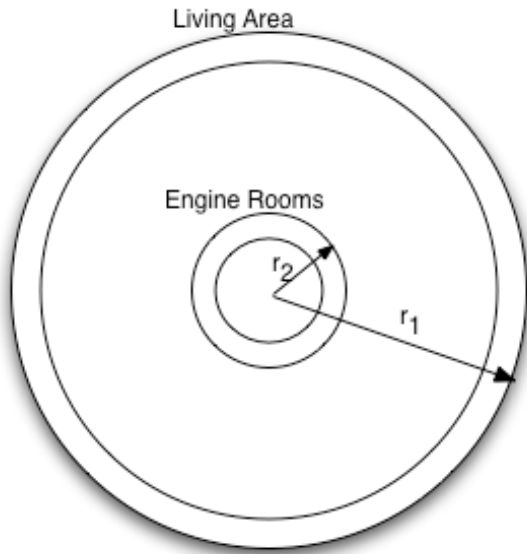


Do-it-Yourself Spacestation

Name: _____

Imagine you are designing a prototype space station. So that people in the station can move about normally you propose building it as a big ring and spinning it at a rate that will provide an inward acceleration of 1 “g” (9.8 m/s^2). The dimensions for r_1 and r_2 are to be 100m and 20m, respectively.



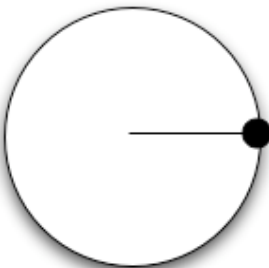
1. Which direction does the top of your head point when you walk in this space station? Where are your feet?
2. How fast must a point located in the living area be moving for its occupants to experience an inward acceleration of 1 “g”?
3. At the above rate, what is the speed of the rotation in degrees/second?

4. What is the acceleration experienced by those working in the engine room? About how many “g’s” is this?

Some practice with vector diagrams :

(draw force vectors in one color, velocity vectors in a second color, and acceleration vector in a third color)

force on ball in horizontal circular motion



force on ball in vertical circular motion

