Homework 1
Assigned: January 15, 2016, Due: January 22, 2016

Our big task this semester will be to develop a steering system for the front and rear wheels on the dancing robot.

We will use a Globe Motor and a gearbox to turn the wheel.

However, we don't know how much torque will be required to turn the wheel at this point.

Step One: design an experiment with the existing frame of the dancing robot (see calliope for a solidworks assembly) that will allow you to measure the force necessary to turn the wheel. Assume that there are 1000 pounds of dancers on the robot. (Later, we'll run the best experiment in scrub school.)

Step Two: For now, assume that it will take 100 inch pounds of torque to turn the wheel under load. If the wheel needs to slew through 180 degrees in 5 seconds, how much power is required by the motor to turn this load.

Step Three: Look up the Globe motor's specifications on the interwebs. What is the maximum torque that the motor can supply? Maximum power is half the product of stall torque and no load speed. Can the motor supply this power?