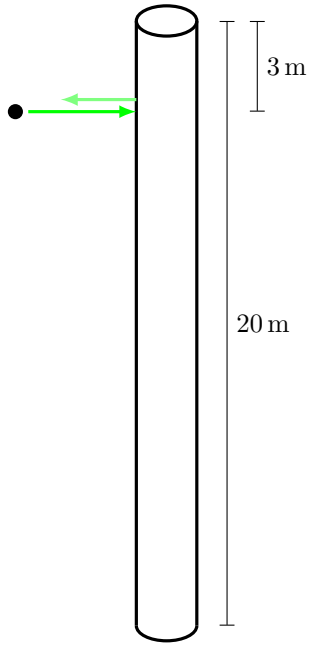
Please answer the questions below to the best of your ability either in the space provided. Everything should be scanned or photographed and submitted through gradescope.com.

Objective: *I can use the angular momentum principle to determine future motion.*

Objective: *I can use multiple fundamental principles to analyze an interaction and subsequent motion.*

1. An old abandoned fuel tank with uniform density floats in the void of space. The tank is cylindrical with a radius of 1 m, a length of 20 m and a total mass of 1000 kg. A 5 kg rocky point mass moving at 30 m/s plunks directly into the tank, 3 m from one of the ends. The rock bounces directly away from the tank at a speed of 24 m/s.



(a) (3 points) How fast is the center of mass of the fuel tank moving after the collision?

(b) (5 points) What is the angular momentum of the fuel tank about its center of mass after the collision?

(c) (2 points) How long will it take the fuel tank to complete one revolution after the collision? Give your answer in minutes. The moments of inertia given in your book will be useful.