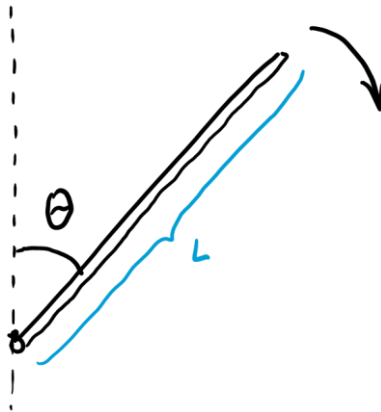


Homework 13.

Problem 1

A uniform 25-cm long stick rotates freely about a horizontal axis through one of its ends. It is released at an angle  $\Theta$  to the vertical. When it hangs straight down, the speed of the tip of the stick is 3.0 m/s. How large is  $\Theta$ ? The moment of inertia of the rod with respect to one of its ends is  $mL^2/12$ .



Problem 2

A uniform solid sphere rolls on a horizontal surface at 20 m/s. It then rolls up the incline (see figure below). If the friction losses are negligible, what will be the value of  $h$  where the ball stops? The moment of inertia of a solid sphere about its center is  $2mR^2/5$ .

