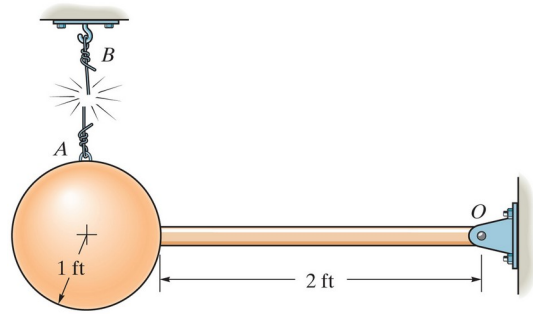


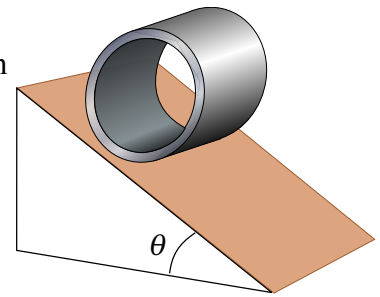
1. The pendulum shown consists of a 20-lb sphere and a massless rod. Compute the reaction at the pin O just after the cord AB is cut.

answer:

$\vec{R} =$ _____



2. The cylinder rolls down the inclined plane ($\theta = 30^\circ$) without slipping. Determine the angular acceleration of the cylinder and the acceleration of its mass center. The cylinder has an outer radius of 50.0 cm, a radius of gyration of 40.0 cm and mass 10.0 kg. Your solution must include a free-body diagram.



answers:

$\alpha =$ _____

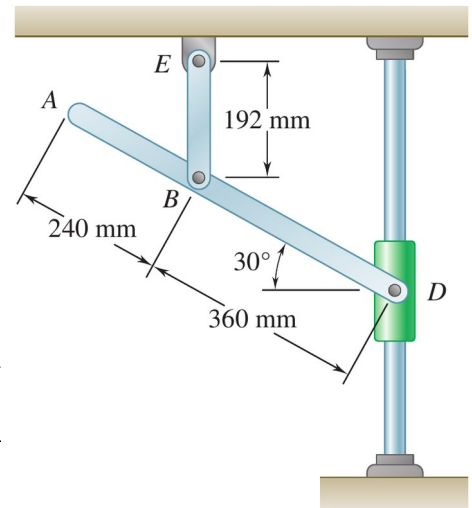
$a =$ _____

3. At the instant shown, rod BE has a counterclockwise angular velocity of 4.0 rad/s that is increasing at a rate of 1.0 rad/s^2 . Determine the velocity and acceleration of the collar D (using positive for upward and negative for downward along the rod).

answers:

$v =$ _____

$a =$ _____



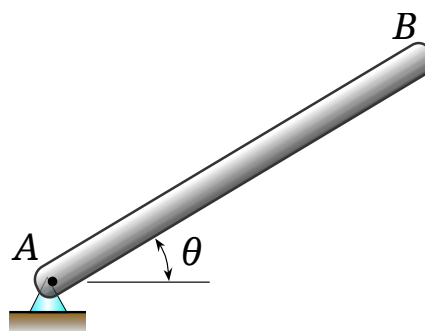
4. The uniform rod AB has a mass of 5.0 kg and length of 1.0 m. It is frictionlessly pinned at A . Determine the angular acceleration of the rod when released from rest at angle $\theta = 30^\circ$. Also determine the reaction forces at A at this moment.

answers:

$\alpha =$ _____

$A_x =$ _____

$A_y =$ _____



Large empty rectangular box for the student's solution.