

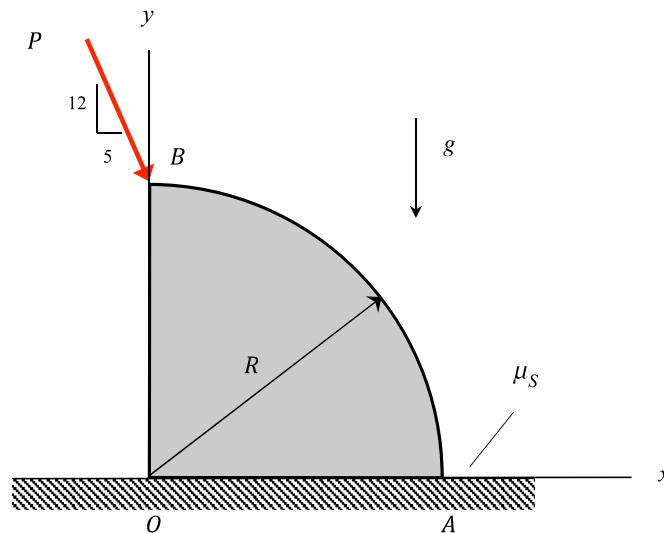
### Homework H18.A

**Given:** A homogeneous quarter-circle block (with a radius of  $R$  and a weight of  $W$ ) is supported by a rough, horizontal floor, as shown.. A force  $P$  is applied to the block at corner B.

**Find:** For this problem:

- Determine the  $x$ -location of the normal force acting on the block by the floor. Express your answer in terms of  $R$ .
- What is the minimum coefficient of static friction between the block and ground,  $\mu_s$ , that is required to prevent motion of the block?
- Is the block in a state of impending slipping or tipping for the value of  $\mu_s$  found in b) above? Explain.

For this problem, use:  $P = W$ .



**Homework H18.B**

**Given:** A homogeneous triangular block having a weight of  $W$  and its center of mass at  $G$  is supported by a slider on a rough horizontal guide at  $A$  and by smooth roller on a horizontal surface at  $C$ . The coefficient of static friction of  $\mu_s$  exists between the slider and the guide at  $A$ .

**Find:**

- Determine the maximum force  $F$  that can be applied at  $B$  and not have the block move. Express your answer in terms of the weight  $W$ .
- For the force  $F$  found above, is the block in a state of impending tipping or impending slipping?

For this problem, use the following parameter value:  $\mu_s = 0.50$ .

