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.

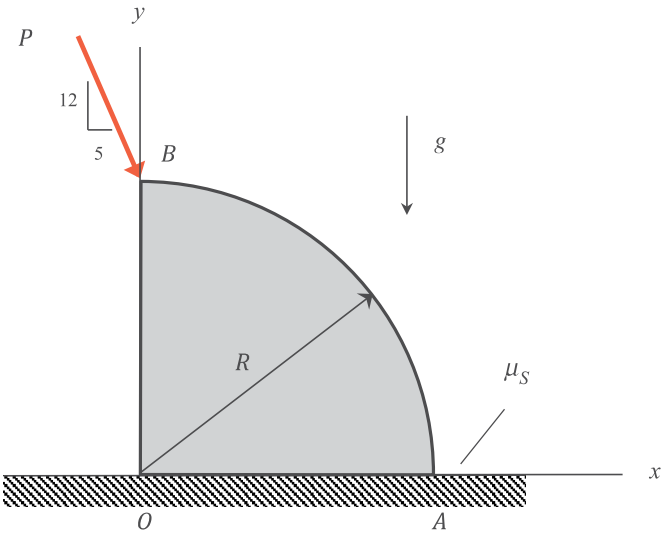
Find: For this problem:

a) Determine the x-location of the normal force acting on the block by the floor. Express your answer in terms of R.

b) What is the minimum coefficient of static friction between the block and ground, μ_s, that is required to prevent motion of the block?

c) Is the block in a state of impending slipping or tipping for the value of μ_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 μ_S exists between the slider and the guide at A.

Find:

a) 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.

b) 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: $\mu_s = 0.50$.