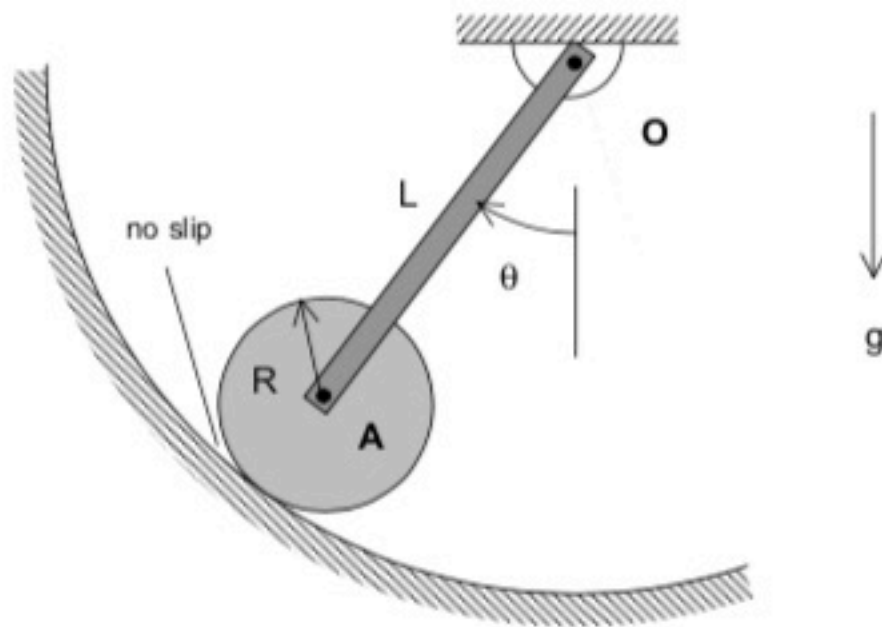


## Section 5.B - bonus question #1

**Given:** A thin homogeneous bar of length  $L$  and mass  $m$  is pinned to ground at point  $O$ . A homogeneous disk with a mass of  $M$  and radius  $R$  is PINNED to end  $A$  of the bar. The disk rolls without slipping on the inside of a circular surface. The system is released from rest with  $\theta = 90^\circ$ .

**Find:** Find the angular velocity of the bar when  $\theta = 0^\circ$ .



Use the following parameters in your analysis:  $L = 1.5$  m,  $R = 0.6$  m,  $m = 30$  kg and  $M = 100$  kg.