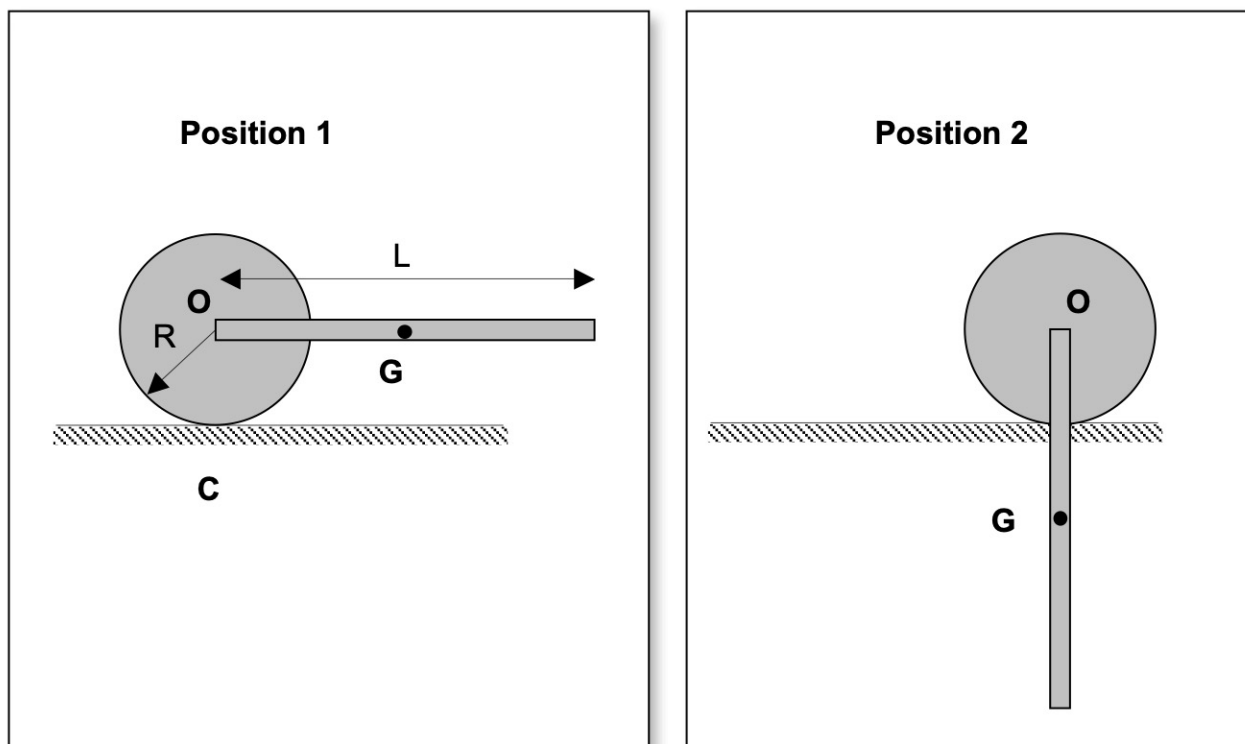


## Homework H.5.P

**Given:** A homogeneous disk (having a mass of  $M$  and outer radius of  $R$ ) is welded to a thin, homogeneous bar having a mass of  $m$  and length  $L$  with the end of the bar located at the center  $O$  of the disk. The disk is able to roll without slipping on a horizontal surface. The system is released from rest at Position 1 with the bar being horizontal at this position. On release, the system moves to the right. At Position 2 shown below the bar is vertical.

**Find:** Determine the speed of point  $G$  when the system is at Position 2.



Use the following parameters in your analysis:  $M = 10$  kg,  $m = 20$  kg,  $R = 1$  m and  $L = 4$  m.