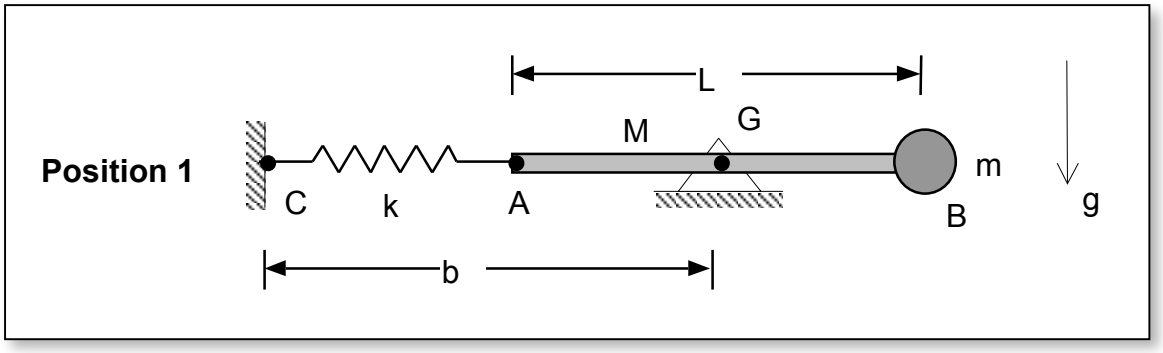
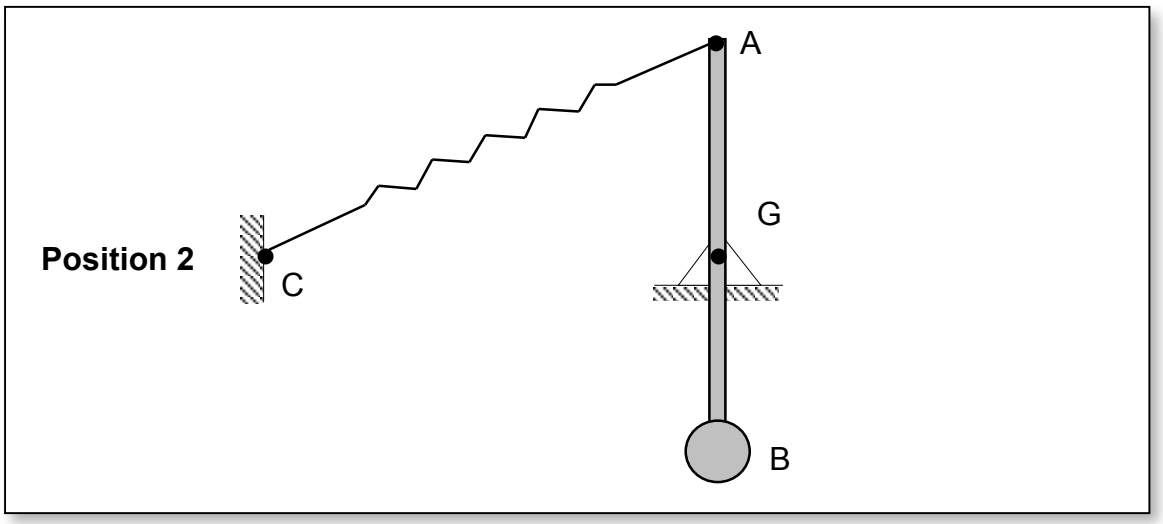
Homework H.5.G

Given: A thin, homogeneous bar having a mass of M and length L is pinned to ground at its mass center G. Particle B, having a mass of m, is rigidly attached to the right end of the bar. A spring, having a stiffness of k, is attached between end A of the bar and pin C on a wall. The pin G is a distance of b from the wall. When the bar is horizontal (Position 1 shown below), the spring is unstretched.

Find: If the bar is released from rest in Position 1 above, find the angular velocity of the bar in Position 2 when the bar is in a vertical position.





Use the following parameters in your analysis: $M = 15$ kg, $m = 25$ kg, $k = 100$ N/m, $L = 3$ m and $b = 2.5$ m.