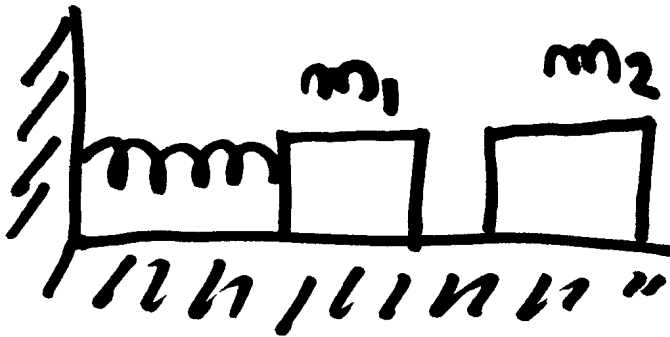


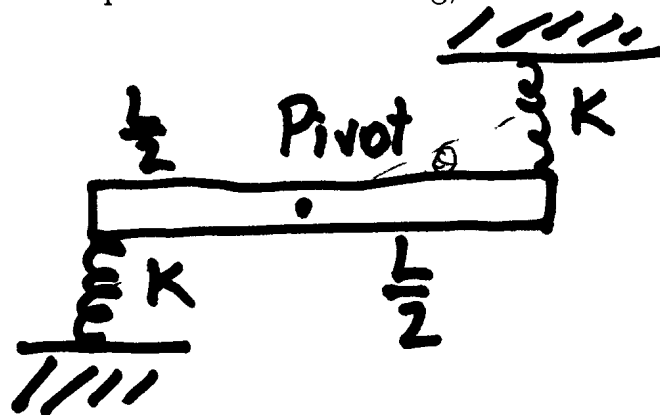
Figure of Problem3



Problem 4.

A uniform stick represented in the figure has a mass  $m$  and a length  $L$  and is pivoted at the center. In the equilibrium position shown, the identical light springs have their natural length.

- a) Show that the stick will undergo simple harmonic motion, when turned through a small angle  $\theta$  from the position shown and released.
- b) What is the frequency of the motion?
- c) How fast will the tip of the stick be moving, when the stick passes the horizontal? [10 points].



Problem H1.

As shown in the figure a uniform disk of radius  $R$  and mass  $M$  is attached to the end of a uniform rigid rod of length  $L$  and mass  $m$ . When the disk is suspended from the pivot as shown, what will be the period of motion?