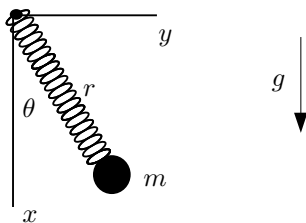


1 Springy Pendulum



The springy pendulum shown above has a rest spring length a , a spring constant k , and a bob mass of m . r is the distance from the origin (pivot point) to the bob. Find **(a)** the Lagrangian, $L(r, \theta, \dot{r}, \dot{\theta})$, and **(b)** the differential equations of motion. Simplify your results.