

**Homework 6.B**

**Given:** Gears A and B (having mass  $m$ , and outer radii of  $2R$  and  $R$ , respectively) mesh without slipping. Two identical springs, each of stiffness  $k$ , are wrapped around the outer radii of the gears, as shown in the figure below. Let  $\theta$  represent the rotation of gear A, and let both springs be unstretched when  $\theta = 0$ . Treat the gears as homogeneous disks.

**Find:** Derive a single differential equation of motion for the system in terms of the coordinate  $\theta$ .

