Section A. Mechanics

1. **Rotating Crankshaft**

   An automobile crankshaft is a planar rigid body made of 8 rods each of mass m, length a, welded together as shown. Suppose the crankshaft rotates about the z axis with constant angular velocity $\omega > 0$. Find the directions and magnitudes of the forces on the two bearings A and B at a moment when the crankshaft lies in the $x - z$ plane as shown. The bearings are located on the ends of the two rods which lie along the x axis. Ignore gravity.