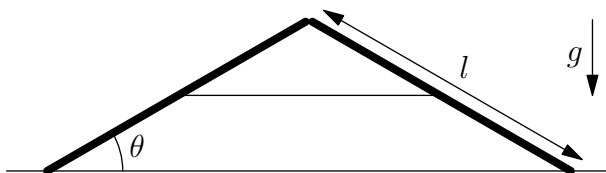


## J00M.2—Linked Rods Falling

### Problem

The centers of two thin rods with mass  $m$  and length  $l$  are connected by a thread, and the two ends are connected by a very short flexible thread. The threads have negligible mass. The other ends of the rods are free to slide without friction on a horizontal table. The plane of the rods is normal to the table, so the gravitational acceleration  $g$  is in the plane of the rods, as shown in the drawing. The rods are at rest, and make angle  $\theta$  with the table. When the thread connecting the centers is cut the rods fall vertically until they hit the table.



- Find the speed at which the connected ends of the rods are falling immediately before they hit the table.
- Find the tension in the thread that connects the ends of the rods immediately before the rods hit the table.