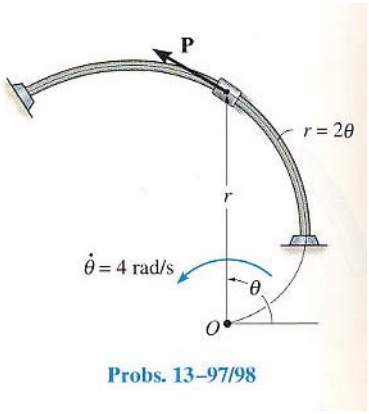
Problem 3.9a (Replaces problem 3.9 in course notes) *From Hibbeler Dynamics 7th ed.*

The 2-lb collar slides along the smooth horizontal spiral rod, $r = (2\theta)$ ft, where θ is in radians. If its angular rate of rotation is constant and equals $\dot{\theta} = 4$ rad/s, determine the tangential force P needed to cause the motion and the normal force that the spool exerts on the rod at the instant $\theta = 90$ degrees.



Probs. 13–97/98