

PROBLEM P1

As the arm shown below rotates, a peg in the underside of the slider follows the spiral groove in a fixed plate and pulls the slider outward. The spiral is given by $r = a\theta^2$. Derive a formula for the velocity and acceleration of the peg with respect to the ground in terms of the following variables: θ , $\dot{\theta}$, $\ddot{\theta}$, and a . Express your result in the fixed reference frame shown.

