ROSE-HULMAN INSTITUTE OF TECHNOLOGY

Department of Mechanical Engineering

ES 204 Mechanical Systems

Problem P2

The endpoints of the bar slide on the plane surfaces. Show that the acceleration of the midpoint G is related to the bar's angular velocity and angular acceleration by

$$\vec{a}_{_{\rm G}} = \frac{L}{2} \Big[\! \big(\! \alpha \cos \theta - \omega^2 \sin \theta \big) \! \hat{i} - \! \big(\! \alpha \sin \theta + \omega^2 \cos \theta \big) \! \hat{j} \Big]$$

