

### Physics 300 Problem set #4

- 1:** A block with mass,  $m$ , oscillates on a spring with stiffness,  $k$ . The spring oscillates horizontally on a surface with no friction. Use Lagrange dynamics with undetermined multipliers to determine the magnitude of the normal force.
- 2:** How does the water in a spinning bucket arrange itself, given that its surface must be perpendicular to the force that holds the water?