

## PHYS 620 Classical Mechanics: Assignment 7

Due 10/21/24

1. Taylor: Problem 13.5.
2. Taylor: Problem 13.13.
3. Taylor: Problem 13.16.
4. Consider a wedge of mass  $m_2$  with the incline angle  $\alpha$  and height  $h$  sliding without friction on a horizontal plane in Earth's gravitational field with a constant gravity acceleration  $g$ . There is a small block of mass  $m_1$  on the incline, sliding without friction. Assume that at time zero the system is at rest with the small block at the top of the wedge. Determine the motion of both bodies as a function of time (use any convenient coordinates but express your final answer in terms of  $q_1(t)$ —the distance of the small block from the top of the edge and  $q_2(t)$ —the distance of the vertical wall of the edge from an arbitrary point on the plane). Find the time it takes for the block to reach the bottom of the incline. Use Hamilton's equations.
5. Taylor: Problem 4.43.
6. Taylor: Problem 4.44.