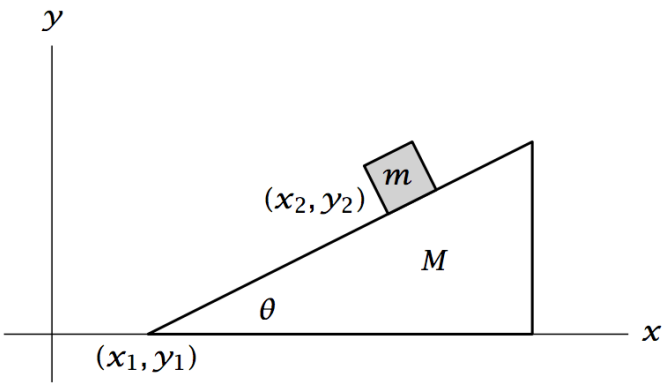
A wedge of angle θ and mass M is free to slide horizontally on a frictionless table. A small block of mass m is placed on the wedge, and can also slide without friction. Using Lagrange multipliers, find the equations of motion and the forces of constraint.



You'll notice that there are now four differential equations, one each for x_1, x_2, y_1 and y_2 (see Hamill equation 3.16) plus two equations of constraint, one constraining the wedge to the horizontal surface, and one constraining the block to the wedge. After deriving these six equations you will be able to solve them for the two Lagrange multipliers $\lambda_1 \text{and } \lambda_2$ and then derive the forces of constraint from the formula on p. 80.