SOLUTIONS FINAL ADVANCED DYNAMICS

PHY 4241 (Spring, 2011)

PROBLEM 1

See Homework 9 and $L(q_i + \epsilon_i, \dot{q}_i, t) = L(q_i, \dot{q}_i, t)$ implies

$$0 = \frac{\partial L}{\partial q_i} = \frac{d}{dt}\frac{\partial L}{\partial \dot{q}_i} \;\Rightarrow\; p_i = \frac{\partial L}{\partial \dot{q}_i} \text{ conserved (generalized momentum)}.$$