

Reading: Chapters 9, 10 (as needed to follow lectures and do homework)

Problems:

1. (from the last subject exam) Consider a charged particle of mass m moving in a constant magnetic field of magnitude B in the z direction. The motion can be described by a Lagrangian such as $L = \frac{1}{2} m \vec{v}^2 + e B x v_y$.
(a) Write down the corresponding Hamiltonian for this system in terms of an appropriate set of canonical variables. (b) Write down the Hamilton-Jacobi equation for this system. (c) Outline the procedure that can be used to solve this equation.
2. Goldstein, Problem 10-5.
3. Goldstein, Problem 10-8.
4. Goldstein, Problem 10-26.