

# Final Exam Notes

December 8, 2012

The final exam will cover the material of the second half of the semester, including (only) topics we have discussed from Chapters 5, 8, 9, 10 and the lecture notes.

The exam will be closed book, but relevant equations will be provided with the test.

Study and expect the following:

1. Compute a component of the moment of inertia tensor about an axis of symmetry of a specified symmetric rigid body.
2. Demonstrate correct use of index notation.
3. Given the description of a physical system, write its Lagrangian and/or action, then find the conjugate momenta, Hamiltonian, and Hamiltonian equations of motion for the system. Solve if asked.
4. You will be asked to reproduce one of the examples of the Hamilton-Jacobi method given in the notes "Hamilton-Jacobi Examples". This includes writing the Lagrangian, finding the conjugate momenta and Hamiltonian, writing and solving the Hamilton-Jacobi equation to find Hamilton's principal function, then using the principal function as a generating function (with a Legendre transformation, if necessary) to solve the mechanical problem.