Don't even think about working these problems out on this page alone. The solutions should be written neatly on lined or unlined paper with the work clearly labeled. Do not omit scratch work. I need to see all steps. Thanks and enjoy. This is due 5-13-2010 by 5pm in drop-box outside my office.

Problem A49 [50pts] Hildebrand, page 195 problem 9.

Problem A50 [50pts] Hildebrand, page 195 problem 11.

Problem A51 [100pts] Hildebrand, page 195 problem 13.

Problem A52 [50pts] Hildebrand, page 205 problem 56. (you can ignore the part which says "show that the Lagrangian function is" also, you can set the constant to zero without getting into trouble. I'm mainly looking for you to verify that Newton's equations arise from the Euler-Lagrange equation)

Problem A53 [50pts] Hildebrand, page 206-207 problem 57. (again, I really just want you to derive the Euler-Lagrange equations for the given action)

Problem A54 [50pts] Hildebrand, page 208 problem 68.

Problem A55 [50pts] Hildebrand, page 209 problem 69.

Problem A56 [100pts] Hildebrand, page 209 problem 71.

Problem A57 [50pts] Hildebrand, page 194 problem 6. (recall my hints from lecture concerning the chain-rule for this setting. Also, recall this problem is interesting because basically this shows Euler-Lagrange equations either can be written as momentum conservation or energy conservation, for one dependent variable at least, as we saw in lecture the energy depends on all the dependent variables whereas the momentum with respect to the j-th coordinate need only involve the j-th Euler-Lagrange equation.)