Economics 7250
Spring 2007

Prof. Gabriel Lozada
Final Exam

This exam has 75 points. You need to answer all four questions.

You have until 4 PM to finish this test. Answer the questions using as much precision and detail as the time allows. Be sure to watch your time.

Answer all of the following four questions.

1. [**25 points.**] In the 11-page typewritten handout on fisheries economics, the first paragraph of Section 3 deals with private-property competition in schooling fisheries.

   (a) First consider such a private-property competitive schooling fishery *in the steady state.* Using also the handout's equation (3), show that in this case
   $$\delta = F'(x^*)\,.$$
   Illustrate this equation (and x^*) with a graph.

   (b) If, in the setup of part (a), F takes the logistic form $rx(1-x/K)$, find an explicit expression for x^*.

   (c) In the setup of part (b), sketch the steady-state supply curve of fish. Place price on the vertical axis and quantity (fish, "h") on the horizontal axis. Part (b) will explain most of your answer, but you should add an explanation of what you think quantity supplied will be if price is very low. (Hint: how much quantity do you think will be supplied if the price is zero?)

   (d) What happens in part (b) if the intrinsic growth rate is less than the rate of discount? What is the intuition behind this result?

   (e) For the rest of this question, take the setup in part (b) and suppose that the intrinsic growth rate is less than the rate of discount. Illustrate the *dynamic* evolution of this system, using a phase diagram. You do not have to re-derive any formula you find in my fisheries handout. (Hint: you *can* sign $\delta - F'$ given these assumptions. If you can't figure out how, then explicitly calculate F'.)

   It is not interesting to consider the case in which costs are so high that profit is always negative. It is also not interesting to consider dynamic paths in which profit is always negative.

2. [**13 points.**] Discuss one (of the many) confusing or erroneous parts of Section 7.2 of your textbook (pages 215–216).

3. [**25 points.**] Explain the model on pages 120–121 of your textbook. Change the notation as follows:

   - Call the profit-maximizing firm "f" instead of "1."

- Call the pollution victim "v" instead of "2."
- Call the fixed price of output "p" instead of "r."
- Call the compensation announcements "comp_f" and "comp_v" instead of p_1 and p_2.

Also, instead of *assuming* that "the higher compensation demanded by person 2, the less person 1 will produce," prove that is the case (or find conditions under which it will be the case).

4. [**12 points.**] E.F. Schumacher writes that from a Buddhist point of view, "to strive for leisure as an alternative to work would be considered a complete misunderstanding of one of the basic truths of human existence…." What does this mean? How is it different from the traditional neoclassical approach?