

EC314-Fall 2010 Problem Set 7

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When you write up your answers, your goal should be to (1) be correct, and (2) convince your reader that your answer is correct. Answers which do not achieve these goals will not be awarded full credit. To accomplish the second objective, it is helpful if your work is legible and if all steps are presented, possibly with a line of explanation. **Please STAPLE pages together so that we do not lose them.** (This problem set updated: 18 August 2010).

Problems

1. Suppose that the growth equation for a stock of fish is

$$F(X) = rX \left(1 - \frac{X}{k}\right)$$

and the harvesting technology is

$$H = qXE.$$

Further suppose that $q = 1, k = 1, r = 2$. Let the cost of effort be c and the price of harvested fish be 1.

- (a) On a graph which shows ARP, MRP, and MC curves, illustrate the tax which causes an open access fishery to choose the rent maximizing level of effort.
 - (b) On a graph which shows AC and MC Curves, illustrate the tax which causes an open access fishery to choose the rent maximizing level of effort.
 - (c) On a graph which shows Total revenue and Total Cost Curves, illustrate the tax which causes an open access fishery to choose the rent maximizing level of effort.
 - (d) Find the optimal tax.
 - (e) Find the optimal quota.
2. List two problems, and explain briefly, with using taxes to manage an open access fishery.
 3. List two problems, and explain briefly, with using quotas to manage an open access fishery.