

Economics 43535: Assignment 1  
(due Wednesday, February 19)

Professor Jensen

Spring 2014

1. Consider the following example of sustainable yield from fishing for yellow perch on lakes in Wisconsin. Sustainable yield as a function of fishing effort (labor)  $e$  is

$$SY(e) = 300e - e^2.$$

Assume price per fish is constant (like Gordon), and for convenience set it to 1. Then the associated total revenue, average revenue, and marginal revenue curves for the fishing “industry” on this lake are

$$\begin{aligned} TR(e) &= 300e - e^2, \\ AR(e) &= 300 - e, \text{ and} \\ MR(e) &= 300 - 2e. \end{aligned}$$

Also assume the total cost of fishing effort is

$$TC(e) = 50e,$$

so the marginal cost and average cost of fishing effort are both constant at 50, or

$$MC(e) = AC(e) = 50.$$

a. What is the market outcome in this market under perfect competition (open-access fishing)?

In particular, determine:

- (1) the level of effort  $e_O$ .
- (2) the size of the catch  $C_O$ .

b. What is the socially efficient outcome in this market? Again, determine:

- (1) the level of effort  $e_S$ .
- (2) the size of the catch  $C_S$ .

c. What is the outcome that would occur if the fishers merged and formed a monopoly? Now determine:

- (1) the level of effort  $e_M$ .
- (2) the size of the catch  $C_M$ .
- (3) profit.

2. Compare and contrast these three outcomes.