

Please write your answers on a clean sheet of paper that I can run through a Xerox machine. There are six problems in this assignment, and one extra credit question. The first five problems are all mathematical, while the sixth is a short answer problem. Full credit on the extra credit question will add 1% to your final grade. Although the exact contribution of this homework assignment to your final grade will not be known until the end of the course (as the total number of homework assignments is as yet unknown,) it will be worth at most 5%, and at least 3%. (**due in class on Monday, 2/23**)

1. Church and Ware (2000, p. 43), Chapter 2, #4
2. Church and Ware (2000, p. 46), Chapter 2, #10
3. Church and Ware (2000, p. 104), Chapter 3, #2
4. Consider an industry with a demand relationship given by

$$P = 120 - Q$$

Assume marginal costs and average total costs are zero ( $MC = AC = 0$ ).

- a) How much quantity would a profit maximizing monopolist produce, and what price would it charge?
  - b) How much quantity would a profit maximizing firm produce, and what price would it charge if it were in a competitive market?
  - c) Assume there are two firms and that they engage in Bertrand competition, that is, compete on prices. What price will result in the market and how much output will be produced?
  - d) *Now assume the two firms engage in Cournot competition. How much output would each firm produce? What price would result in the market? In what way is this Cournot equilibrium also a Nash equilibrium? (Question to be added to homework 2, due 3/9/2009)*
5. Consider the Coasean-inspired model of outsourcing from lecture, where the decision to be made is whether to make or buy, and the firm chooses the lowest cost method of organizing production. Assume that the price of procuring one unit of the input in the spot market is  $P=1$ , the wage a firm would have to pay an employee to produce one unit of the service is  $W=3$ , and transaction costs (which include all those things mentioned in Church and Ware, 2000, pp.73-74) are given by  $TC=q^2$ .
- a) If the firm wants to provide  $q=1$ , should it make or buy? Why?
  - b) If the firm wants to provide  $q=2$ , should it make or buy? Why?
  - c) If the firm wants to provide  $q=3$ , should it make or buy? Why?

6. **Short Answer** (not to exceed 175 words; the shorter the better).

***Pick One Only!***

Option 1

Describe a specific example, either true or fictional, of how making someone a residual claimant led to greater high-powered incentives. You might discuss how making someone a residual claimant provides incentives for greater effort or greater investment in cost reduction. (Hint: recall the discussion from lecture, or if you're stuck, see Church and Ware, 2000, exercise 3.1 for some ideas, though they don't give specific examples.)

Option 2

Describe or invent a novel example of how human-asset, physical-asset, or site specificity led to a hold-up problem for one party.

**Extra Credit #1:**

Read the section of Church and Ware (2000, pp. 96-98), titled, "An Optimal Incentive Contract with Hidden Actions." What is the optimal contract in the full information case? What is the optimal contract in the unobservable effort case? In which case does the manager make more money? In which case is he better off? Show your work for full credit.