Christiansen
Economics 230H
Fall 2000
Exam #5

Name _____

1. Consider a monopolist that sells the same product in two different markets. (I.e., it can practice *price discrimination.*)

a. (7 points) Beginning with the demand functions $Q_1(P_1)$ and $Q_2(P_2)$ for the two markets and the cost function $C(Q)$, and *presuming that the total amount Q to be sold has been determined,* set up the constrained optimization problem that must be solved to determine how much is to be sold in each market.

b. (6 points) Use the technique of Lagrange multipliers to solve the problem in part a. What conditions must be satisfied at the solution? Explain carefully.

c. (6 points) What is the value function for the problem in parts a and b? What is the economic interpretation of the Lagrange multiplier? Explain carefully.

d. (6 points) What is the difference between the problem solved in parts a, b, and c and the problem of profit maximization for the discriminating monopoly? What is the relationship between the solutions of the two problems? Explain.

2. a. (18 points) A firm hires two inputs x_1 and x_2 and produces one output Q. The price of input one is 3.2 and that of input two is 21.6. The production function is $Q = x_1^4 x_2^6$. Calculate the cost function $C(Q)$.

b. (7 points) Using the terms *isocost, isoquant,* and *expansion path,* explain using words and graphs what you have done in part a.