Intermediate Microeconomics (Honors)

Fall 1999

Assignment 8

Due Date: November 16

Be sure to show all of your work and clearly indicate your final response to each question

1. Consider the cost-minimizing behavior of a firm with a production technology given by

   \[ q = \ln(n + 1) + 2k \]

   where \( n \) denotes labor and \( k \) denotes capital. Let \( \pi \) denote the price of capital, and \( w \) denote the price of labor. Derive the long-run cost function \( c(q) \) assuming both factors are freely variable.

2. A firm has a production technology given by

   \[ q = 2n + k. \]

   The price of capital (\( \pi \)) is equal to 1, but the price of labor is unknown until after the decision of how much capital to buy is made. The firm believes that the price of labor will be either \( \frac{1}{2} \) or 3, with the probability of each being \( \frac{1}{2} \). No matter what the price of labor turns out to be the firm intends to produce 10 units of output. How much capital should the firm buy assuming that its objective is to minimize expected costs?

3. Chapter 12, Problem 1

4. Chapter 12, Problem 2

5. Chapter 12, Problem 4

6. Chapter 12, Problem 6