Intermediate Microeconomics 301
Second Mid-Term
Spring 2007

Time: 50 minutes.

Instructions. To obtain credit, you must give arguments to support your answer. The numbers in brackets at the start of each question are the numbers of points the questions are worth.

Exercise 1 [30]: If the inverse demand function is \( p = 40 - Q \) and the supply function is \( Q = p - 2 \),

1. What is the initial equilibrium?

2. At the equilibrium price, what is the consumer’s surplus? The producer’s surplus?

3. What is the welfare effect of the imposition of a price floor of $24? (hint: determine welfare after the imposition of the price floor and compare welfare before and after).

Exercise 2 [35]: Suppose a firm has a cost function \( c(q) = (q + 2)^2 \).

1. Find marginal cost, average variable cost, average fixed cost and average total cost. Graph these functions and give the definitions.

2. What is the firm’s supply curve. Graph it.

Exercise 3 [35]: Suppose a production function is given by \( f(K, L) = KL^{\frac{1}{2}} \), and that the price of capital is $1 and the price of labor is $1. (Long Run analysis)

1. Does this technology exhibit increasing, decreasing or constant returns to scale?

2. What is the marginal rate of technical substitution?

3. What combination of labor and capital minimizes the cost of producing any given output?

4. What is the minimum cost of producing \( q \) units of output?

5. What are the marginal cost of production and the average cost?