Intermediate Microeconomics 301
Second Mid-Term
Thursday, April 1, 2004

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 [20]: Draw a graph showing a set of isoquants that depict capital and labor to be perfect complements (not substitutable at all) in a production function that exhibits constant return to scale. Be sure to label the input and output levels on the isoquants.

Exercise 2 [20]: If input prices are $w = 2$, and $r = 1$ and $q = 2KL$, what is the least cost input combination required to produce $q$ units of output? Suppose instead that capital was fixed at 2 units. What would be the implications for labor usage and total cost?

Exercise 3 [30]: If each competitive firm in an industry has the short-run cost function $C(q) = 125 + q^2$,

1. What is the individual supply of each firm? Graph
2. If the market price is $40, what is the profit-maximizing output level for each firm? What is the total revenue? What are the profits?

Exercise 4 [30]: If the inverse demand function is $p = 60 - Q$ and the supply function is $Q = p$,

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 a specific tax of $2? (hint: determine welfare after the imposition of a tax, and compare welfare before and after).