ECON 415
Firms, Markets and Industry Structure

First midterm: Wednesday September 26, 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 [35]: You are a manager in a perfectly competitive market. The price in your market is $40. Your total cost curve is

\[ C(Q) = 10 + \frac{1}{2} Q^2 \]

a. What level of output should you produce in the short run? Represent a graph.
b. What price should you charge in the short run?
c. Will you make any profit in the short run?
d. What will happen in the long run?

Exercise 2 [35]: The demand for milk and the total cost of a diary are specified by the following equations:

\[ p(q) = 100 - q \]
\[ TC(q) = 30q \]

1. Suppose there is a monopoly in the industry. Derive an equation for marginal revenue of the monopolist. Graph the demand and marginal revenue curves.
2. Derive the marginal cost and the average cost of milk production. Graph the marginal cost and the average curve on the same graph.
3. Show the monopoly’s profit-maximizing price and quantity on the graph. Derive those values numerically.
4. What is the efficient level of milk production? Show on the graph, and calculate the total surplus associated with efficient production. Show the consumer surplus that would result under monopoly, and derive it numerically. Indicate the region which is the difference between these two consumer surpluses. Explain what happens to this “missing surplus” under monopoly.

Exercise 3 [30]: The widget industry is comprised of six firms of varying sizes. Suppose their sales in the year 2003 are as follows:
1. What is the concentration ratio in the industry? Use the four-firm concentration ratio and the Herfindahl-Hirshman index.

2. Would you regard this industry as oligopolistic? Why or why not?

3. Suppose that firm A merges with firm D. What now will be the concentration ratio in the industry? Based on the U.S. Department of Justice merger guidelines (the department of Justice regards markets with post-Merger HHI above 1800 to be highly concentrated and, further, mergers producing an increase in the HHI of more than 50 points in highly concentrated markets post-merger potentially raise significant competitive concerns), do you think the Department of Justice would be likely to block a merger between firm A and D?

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<th>Firm</th>
<th>Sales (millions of dollars)</th>
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<td>A</td>
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<td>B</td>
<td>60</td>
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