Introduction to Microeconomics

Week 12

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April 16, 2024

Question 1

In the long run equilibrium in a perfectly competitive market with infinite number of identical firms, with free entry and exit

A) all firms make positive profit

B) no firms make any profit

C) firms may or may not make profit

D) indeterminate

Question 2

A competitive market has an unlimited number of potential suppliers producing the same output, and each supplier has a cost function $C(q) = q^3 - 4q^2 + 6q$.

Find the equilibrium quantity q produced by each firm in the long run.

Find the long-run equilibrium price.

[Schotter Chapter 15, Ex 3]

Question 3

On Groundhog Island, there is only one source of clean water. The well is owned by Mr. Robinson, who bottles the water for the consumption of the islands occupants. The average and marginal cost of bottling a 5-gallon jug of water is 10. The demand for bottled water on Groundhog Island is $q = 100 - p/2$, where q is the number of jugs and p is the price for a jug of water.

a) Calculate the socially optimal price and quantity of water

b) What would the price and quantity be if Mr. Robinson were a monopolist and acted accordingly?

[Schotter Solved Problem 17.5]

Question 4

Suppose a profit-maximizing monopolist is producing 800 units of output and is charging a price of 40 per unit.

a) If the elasticity of demand for the product is -2, find the marginal cost of the last unit produced.

b) What is the firm's percentage markup of price over marginal cost?

c) Suppose that the average cost of the last unit produced is 15 and the firms fixed cost is 2000. Find the firm's profit.

[Pindyck & Rubenfield Chapter 10, Ex 7]

Question 5

A drug company has a monopoly on a new patented medicine. The product can be made in either of two plants. The costs of production for the two plants are $MC_1 = 20 + 2Q_1$ and $MC_2 = 10 + 5Q_2$. The firm's estimate of demand for the product is $P = 20 - 3(Q_1 + Q_2)$.

a) How much should the firm plan to produce in each plant?

b) At what price should it plan to sell the product?

[Pindyck & Rubenfield Chapter 10, Ex 9]

Question 6

Oligopolies can end up appearing like competitive market if the number of firms is

A) Small and they all cooperate

B) Small and they do not cooperate

C) Large and they do not cooperate

D) Oligopolies can never appear like a competitive market

Question 7

Which of the following is/are true about the Cournot equilibrium?

A) It is when marginal cost is equal to the price

B) No firm can benefit from unilaterally deviating from the Cournot equilibrium

C) It is the equilibrium when firms cooperate

D) It is where the best response curves of the firms intersect

E) None of the above

Question 8

Suppose that two identical firms produce widgets and that they are the only firms in the market. Their costs are given by $C_1 = 60Q_1$ and $C_2 = 60Q_2$. Price is determined by the demand curve $P = 300 - Q$. Here Q is the market demand, and Q_1 is the output of firm 1, Q_2 is the output of firm 2.

Find the Cournot-Nash equilibrium.

Calculate the profit of each firm at this equilibrium.

[Pindyck & Rubenfield Chapter 12, Ex 6]

Question 9

In question 6, assume firm 1 is the leader, and firm 2 is the follower. Find the Stackelberg reaction function of both firms.

Reference Reading

1. *Workouts in Intermediate Microeconomics 6e* by Hal Varian
2. *Microeconomics: A Modern Approach* by Andrew Schotter
3. *Microeconomics 9e* by Pindyck and Rubenfield
4. *Microeconomics* by Jeffrey Perloff