Chapter 15

1. a.   What are the three sources of the barriers to entry that allow a monopoly to remain the sole seller of a product?

Answer:
A key resource is owned by a single firm (monopoly resource), the government gives a single firm the exclusive right to produce a good (government created monopoly), the costs of production make a single producer more efficient (natural monopoly).

b.   What is the entry barrier that is the source of the monopoly power for the following products or producers? List some competitors that keep these products or producers from having absolute monopoly power.

1   The UK's Royal Mail (postal service)
2   Perrier Spring Water
3   Prozac (a brand name drug)
4   DeBeers Diamonds
5   Economics, by N. Gregory Mankiw and Mark P. Taylor (your textbook)

Answer:
1   Natural monopoly – granted by government charter. E-mail, Fax machines, telephone, private delivery such as Federal Express.
2   Monopoly resource. Other bottled water, soft drinks.
3   Government created monopoly due to a patent. Other drugs for depression, generic drugs when the patent expires.
4   Monopoly resource. Other gems such as emeralds, rubies, sapphires.
5   Government created monopoly due to copyright. Other principles of economics text books.

2.   Suppose a firm has a patent on a special process to make unique smoked salmon. The following table provides information about the demand facing this firm for this unique product.

Pounds of Salmon	Price	$(P \times Q)$ Total Revenue	$(\Delta TR/\Delta Q)$ Marginal Revenue
0	€20	____	
1	18	____	____
2	16	____	____
3	14	____	____
4	12	____	____
5	10	____	____
6	8	____	____
7	6	____	____

a. Complete the table above.

b. Plot the demand curve and the marginal revenue curve in Exhibit 1.

Answer

Pounds of Salmon	Price	(P × Q) Total Revenue	(ΔTR/ΔQ) Marginal Revenue
0	€20	0	
			18
1	18	18	
			14
2	16	32	
			10
3	14	42	
			6
4	12	48	
			2
5	10	50	
			–2
6	8	48	
			–6
7	6	42	

Exhibit 1
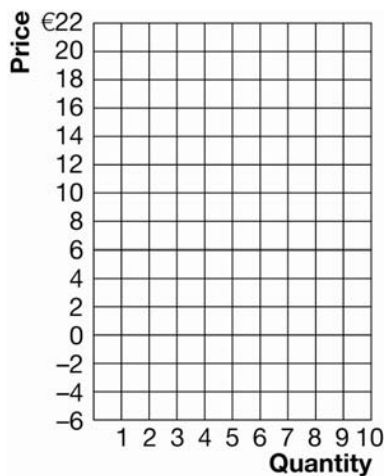
Answer: See Exhibit 5.
Exhibit 5
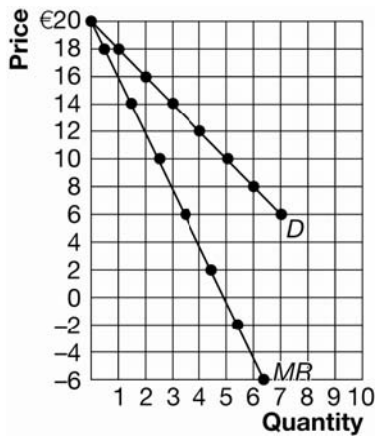
c.   Suppose that there are no fixed costs and that the marginal cost of production
        of smoked salmon is constant at €6 per kilogram. (Thus, the average total cost
        is also constant at €6 per kilogram.) What is the quantity and price chosen by
        the monopolist? What is the profit earned by the monopolist? Show your
        solution on the graph you created in part
         (b) above.

Answer:
Q = between 3 and 4 units (say 3.5), P = between €12 and €14, (say €13). Profit = $TR - TC$
or profit = (3.5 x €13) – (3.5 x €6) = €45.50 – €21.00 = €24.50. (Or profit = ($P - ATC$) x Q =
(€13 – €6) x 3.5 = €24.50.) See Exhibit 6.

Exhibit 6
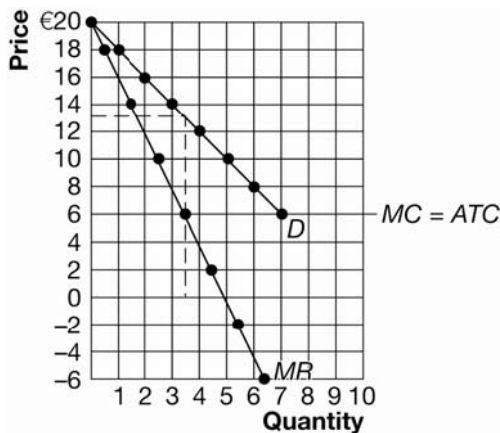
e.   What is the price and quantity that maximizes total surplus?

Answer:
7 units at €6 each. (The efficient solution is where the market produces all units where
benefits exceed or equal costs of production which is where demand intersects *MC*.)

f.   Compare the monopoly solution and the efficient solution. That is, is the
        monopolist's price too high or too low? Is the monopolist's quantity too high or
        too low? Why?

Answer:

Yes. Units from 3.5 to 7, or an additional 3.5 pounds of salmon are valued by the consumer at values in excess of the €6 per pound *MC* of production and these units are not produced and consumed when the price is €13. (Deadweight loss = the deadweight loss triangle = 1/2 (7 – 3.5) x (€13 – €6) = €12.25.)

g. Is there a deadweight loss in this market if the monopolist charges the monopoly price? Explain.

Answer: Yes. Units from 3.5 to 7, or an additional 3.5 kilograms of salmon are valued by the consumer at values in excess of the €6 per pound *MC* of production and these units are not produced and consumed when the price is €13. (Deadweight loss = the deadweight loss triangle = 1/2 (7 – 3.5) x (€13 – €6) = €12.25.)

h. If the monopolist is able to costlessly and perfectly price discriminate, is the outcome efficient? Explain. What is the value of consumer surplus, producer surplus, and total surplus? Explain.

Answer:
Yes, all units are produced where the value to buyers is greater than or is equal to the cost of production (7 units). Total surplus is now producer surplus and there is no consumer surplus. Total surplus and producer surplus is the area under the demand curve and above the price or 1/2(€20 – €6) x 7 = €49. Consumer surplus = €0.

3. a. What type of market is represented in Exhibit 2: perfect competition, monopoly, or natural monopoly? Explain.

Exhibit 2
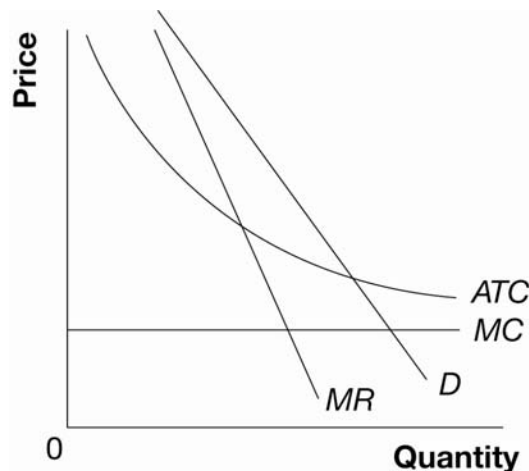
Answer:
Natural monopoly because *ATC* is still declining at the quantity that could satisfy the entire market.

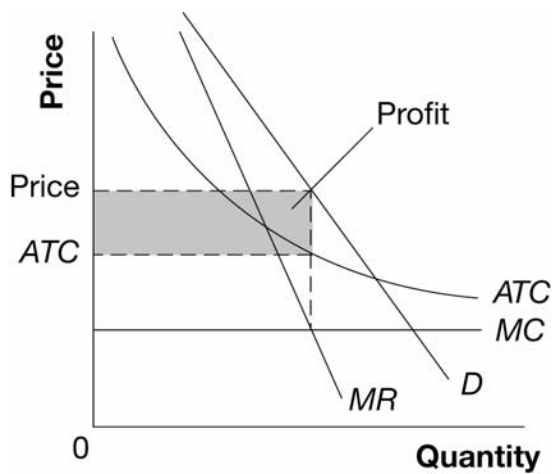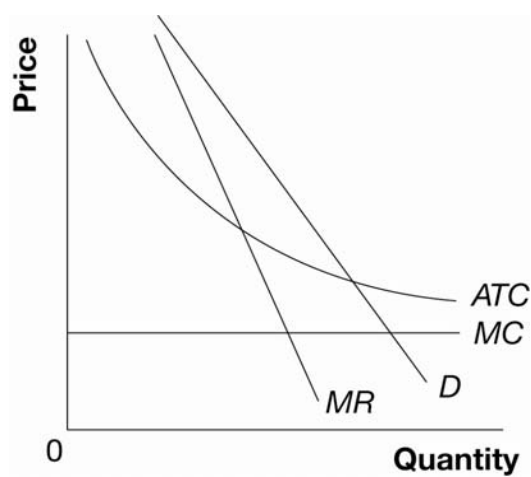b. Show the profit or loss generated by this firm in Exhibit 2 assuming that the firm maximizes profit.
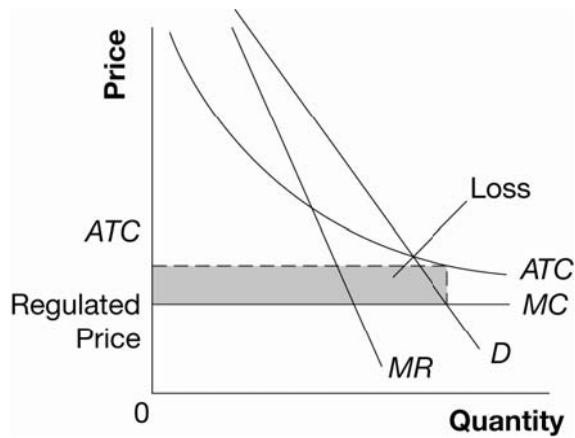
Answer: See Exhibit 7.

Exhibit 7

c.   Suppose government regulators force this firm to set the price equal to its marginal cost in order to improve efficiency in this market. In Exhibit 3 show the profit or loss generated by this firm.

Exhibit 3

Answer: See Exhibit 8.
Exhibit 8

d.   In the long run, will forcing this firm to charge a price equal to its marginal cost improve efficiency? Explain.

Answer:
No. Since marginal cost must be below average total cost if average total cost is declining, this firm will generate losses if forced to charge a price equal to marginal cost. It will simply exit the market, which eliminates all surplus associated with this market.