

Suggested Answers to Review Questions (Revised)

Question 1

a.

- i. As Figure 1 shows, the decrease in supply **decreases** the equilibrium price and **increases** the equilibrium quantity in both markets.
- ii. In the market for gasoline (with inelastic demand), the decrease in supply leads to a relatively large **fall** in the equilibrium price and a small **increase** in the equilibrium quantity.
- iii. In the market for corn (with elastic demand), the decrease in supply leads to a relatively large **increase** in the equilibrium quantity and a small **decrease** in the equilibrium price.
- iv. Because demand is inelastic in the market for gasoline, the percentage **increase** in quantity will be lower than the percentage **fall** in price; thus, total consumer spending will **fall**. Because demand is elastic in the market for corn, the percentage **increase** in quantity will be greater than the percentage **fall** in price, so total consumer spending will **increase**.

b. A worldwide drought could increase the total revenue of farmers if the price elasticity of demand for grain is inelastic. The drought reduces the supply of grain, but if demand is inelastic, the reduction of supply causes a large increase in price. Total farm revenue would rise as a result. If there is only a drought in Thailand, Thailand's production is not a large enough proportion of the total farm product to have much impact on the price. As a result, price does not change (or changes by only a slight amount), while the output of Thai farmers declines, thus reducing their income.

c. With a price elasticity of demand of 0.4, reducing the quantity demanded of gasoline by 20% requires a 50% increase in price, because $20/50 = 0.4$. With the price of gasoline currently \$2, this would require an increase in the price to \$3.33 a litre using the midpoint method (note that $(\$3.33 - \$2)/\$2.67 = .50$).

Question 2

- a. Figure 1 illustrates the market for groceries when there are many competing supermarkets with constant marginal cost. Output is Q_C , price is P_C , consumer surplus is area A, producer surplus is zero, and total surplus is area A.

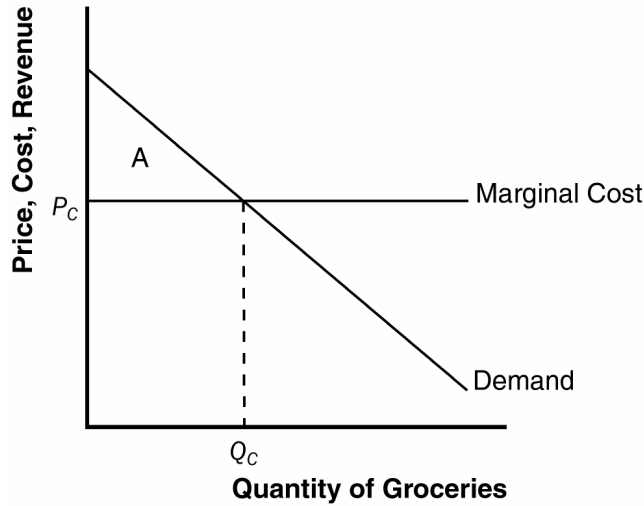


Figure 1

- b. If the supermarkets merge, Figure 2 illustrates the new situation. Quantity declines from Q_C to Q_M and price rises to P_M . Consumer surplus falls by areas D + E + F to areas B + C. Producer surplus becomes areas D + E, and total surplus is areas B + C + D + E. Consumers transfer the amount of areas D + E to producers and the deadweight loss is area F.

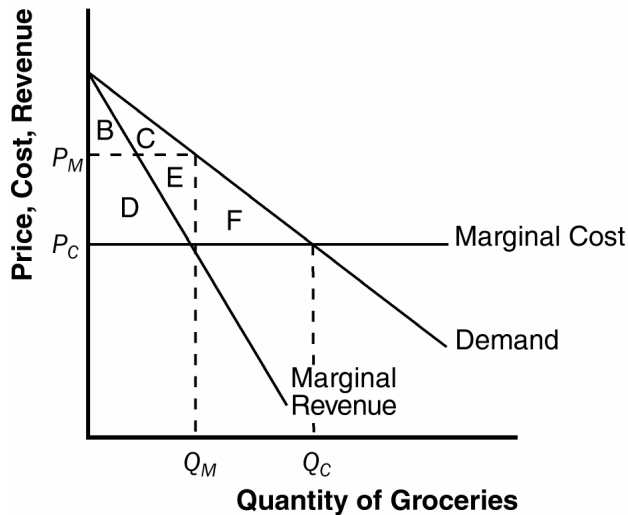


Figure 2

- b. If the price of tap water rises, the demand for bottled water increases. This is shown in Figure 3 as a shift to the right in the demand curve from D_1 to D_2 . The

corresponding marginal-revenue curves are MR_1 and MR_2 . The profit-maximizing level of output is where marginal cost equals marginal revenue. Prior to the increase in the price of tap water, the profit-maximizing level of output is Q_1 ; after the price increase, it rises to Q_2 . The profit-maximizing price is shown on the demand curve: it is P_1 before the price of tap water rises, but rises to P_2 . Average total cost is AC_1 before the price of tap water rises and AC_2 after. Profit increases from $(P_1 - AC_1) \times Q_1$ to $(P_2 - AC_2) \times Q_2$.

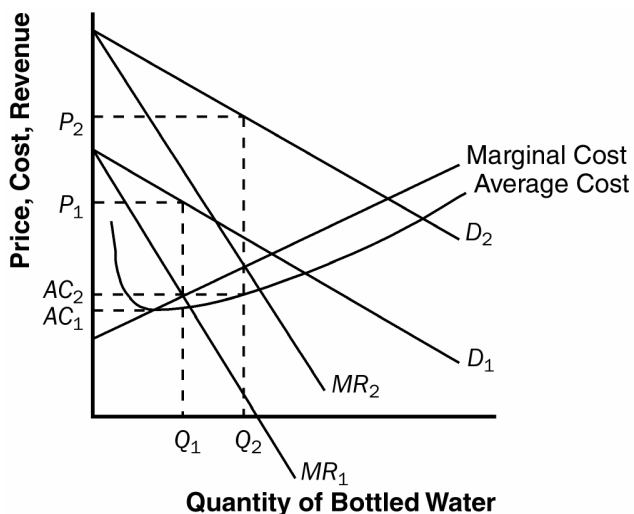


Figure 3

d. The table below shows total revenue and marginal revenue for the bridge. The profit-maximizing price would be where revenue is maximized, which will occur where marginal revenue equals zero, because marginal cost equals zero. This occurs at a price of \$4 and quantity of 400. The efficient level of output is 800, because that is where price is equal to marginal cost. The profit-maximizing quantity is lower than the efficient quantity because the firm is a monopolist.

Price	Quantity	Total Revenue	Marginal Revenue
\$8	0	\$0	----
7	100	700	\$7
6	200	1,200	5
5	300	1,500	3
4	400	1,600	1
3	500	1,500	-1
2	600	1,200	-3
1	700	700	-5
0	800	0	-7

- i. The company should not build the bridge because its profits are negative. The most revenue it can earn is \$1,600,000 and the cost is \$2,000,000, so it would lose \$400,000. (For you to think about: if the company has monopoly rights to the bridge, will it build the bridge? Hint: Price Discrimination.)

ii.

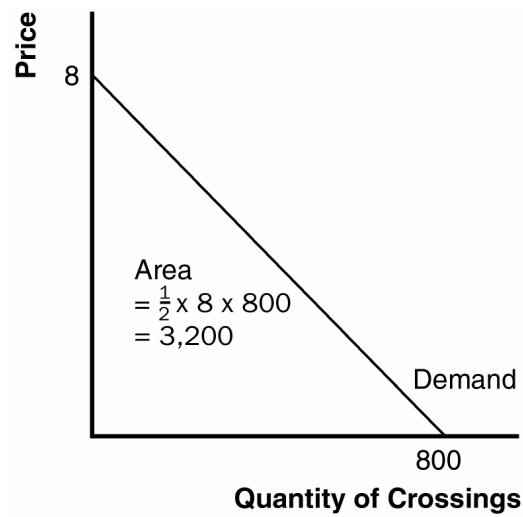


Figure 4

Yes, the government should build the bridge, because it would increase society's total surplus. As shown in Figure 4, total surplus has area $\frac{1}{2} \times 8 \times 800,000 = \$3,200,000$, which exceeds the cost of building the bridge. If the government were to build the bridge, it should set price equal to marginal cost to be efficient. Since marginal cost is zero, the government should not charge people to use the bridge.