Instructor's Manual

Below we have provided answers to all the questions at the end of each chapter. The questions are taken from the exams I have given over the years.

Problems from Chapter 1

1. Consider two individuals who want to get a tuneup for their cars in the morning before going to work: Bill Fletcher, a lawyer who earns $120 per hour, and Dave Miller, a bill collector who earns $60 per hour. They each have to choose between the following three garages offering tuneups, which have the following prices and waiting times:

Garage	Price of Tuneup	Waiting Time
Jiffy	$20	5 minutes
Toughie	$12	10 minutes
Mel's	$8	15 minutes

Which garage will each of them choose? Explain why in detail.

A. The cost to Dave Miller of a tuneup from each garage is as follows:

For Jiffy: $\$20 + \left(\frac{5}{60} \times 60\right) = \$25.$

For Toughie: $\$12 + \left(\frac{10}{60} \times 60\right) = \$22.$

For Mel's: $\$8 + \left(\frac{15}{60} \times 60\right) = \$23.$

While the cost to Bill Fletcher of a tuneup from each garage is as follows:

For Jiffy: $\$20 + \left(\frac{5}{60} \times 120\right) = \$30.$

For Toughie: $\$12 + \left(\frac{10}{60} \times 120\right) = \$32.$

For Mel's: $\$8 + \left(\frac{15}{60} \times 120\right) = \$38.$

Therefore Dave Miller will choose Toughie, and Bill Fletcher will choose Jiffy.

2. Suppose the monthly demand for fax machines in a small city can be expressed by the equation P = 600 – 30Q, and the monthly supply can be expressed by the equation P = 100 + 20Q. What is the equilibrium price and quantity sold of fax machines?

A. To determine the equilibrium, we set the amount demanded equal to the amount supplied:

$$600 - 30Q = 100 + 20Q \Rightarrow 50Q = 600 - 100 \Rightarrow 50Q = 500 \Rightarrow Q = 10.$$

Now to determine the equilibrium price, we substitute Q = 10 into either the expression for demand or supply. Substituting this value into the expression for the amount supplied, we get

$$P = 100 + 20Q = 100 + 200 = \$300.$$

3. The following statement is taken from the Wall Street Journal, March 30, 1966:

"A retired Atlanta railroad conductor complains that he can no longer visit his neighborhood tavern six times a week. Since the price of his favorite beer went up to 30 cents a glass from 25 cents, he has been dropping in only five times a week."

Assuming the man in question consumed the same amount of beer per visit before and after the price change, calculate the elasticity of his demand for tavern-dispensed beer.

A. The price-elasticity of demand is $\dfrac{\dfrac{\Delta Q}{Q}}{\dfrac{\Delta P}{P}} = \dfrac{\dfrac{Q_2 - Q_1}{\dfrac{Q_1 + Q_2}{2}}}{\dfrac{P_2 - P_1}{\dfrac{P_1 + P_2}{2}}}$. Here $Q_1 = 6$ and $P_1 = \$.25$, While $Q_2 = 5$ and $P_2 = \$.30$. Accordingly this elasticity is $\dfrac{\dfrac{5-6}{6+5}}{\dfrac{.30-.25}{\dfrac{.25+.30}{2}}}$ = -1.

4. Mr. Z buys 12 bottles of champagne a year when the price is $45 per bottle. The following year the price of champagne increases to $55 and he buys 8 bottles. What is his price-elasticity of demand for champagne?

A. The price-elasticity of demand is $\dfrac{\dfrac{\Delta Q}{Q}}{\dfrac{\Delta P}{P}} = \dfrac{\dfrac{Q_2 - Q_1}{\dfrac{Q_1 + Q_2}{2}}}{\dfrac{P_2 - P_1}{\dfrac{P_1 + P_2}{2}}}$. Here $Q_1 = 12$ and $P_1 = \$45$,

While $Q_2 = 8$ and $P_2 = \$55$. Accordingly this elasticity is $\dfrac{\dfrac{8-12}{\dfrac{12+8}{2}}}{\dfrac{55-45}{\dfrac{45+55}{2}}} = -2.$

5. Consider the cross-price elasticity of demand for air travel and rental cars. Would you expect it to be positive, negative, or 0? Your answer should explain exactly what the cross-price elasticity of demand is.

A. This elasticity equals the percentage change in the amount of rental cars demanded, divided by the percentage change in the price of air travel (or vice versa). One would expect rental cars to be complementary to air travel; thus if air fares increase, we expect the demand for rental cars to decline. Thus this elasticity should be negative.

6. Suppose in Wayne County the income-elasticity of demand for Palm Pilots is 0.25. If Wayne County income increases by 20 percent, what is the percentage change in demand for Palm Pilots?

A. The income-elasticity of demand, or elasticity of demand with respect to income, is

$\dfrac{\dfrac{\Delta Q}{Q}}{\dfrac{\Delta I}{I}} = .25,$ where Q is the quantity demanded and I is income. Therefore

$\dfrac{\dfrac{\Delta Q}{Q}}{20\%} = .25 \Rightarrow \dfrac{\Delta Q}{Q} = 5\%.$ There should be a 5 percent increase in demand for Palm Pilots.

3. Suppose the monthly demand curve for high-definition TVs faced by a Circuit City store is \$3000 – X, where X is the amount sold per month. The supply curve is \$1000 + 3X.
(a) Determine the equilibrium price and quantity sold.