

Elasticity Problem Set

Problem 1: A 10 percent increase in the price of a good has led to a 2 percent decrease in the quantity demanded of that good.

- a) How would you describe the demand for this good and explain how you know?
- b) Are substitutes for this good easy to find or does it have poor substitutes?
- c) Is this good more likely to be a necessity or a luxury? Why?
- d) Calculate the price elasticity of demand for this good. Show all your work.
- e) Has the total revenue from the sale of the good changed? Explain your answer.
- f) Which of the following goods might this product be? Explain your choice(s)

- I. Orange juice
- II. Bread
- III. Toothpaste
- IV. Theater tickets
- V. Blue jeans
- VI. Clothing
- VII. Super Bowl tickets

2. Suppose that the price of pizza decreases from \$9 to \$7 and other things remain the same, the quantity demanded of pizza increases from 100 to 200 and the quantity of a breadsticks decreases from 200 to 100. At the same time, the quantity demanded of cola drinks increases from 150 to 250.
 - a. Calculate the cross elasticity of demand for cola with respect to pizza? Interpret the results of your calculation.
 - b. Calculate the cross elasticity of demand for breadsticks with respect to pizza. Interpret the results of your calculation.
 - c. Show and explain how the demand for cola and demand for breadsticks have changed given the changes in the price of pizza?

Now assume that as the typical consumer's income rises by 10 percent and other things remain the same, the consumers decrease the quantity demanded of breadsticks by 5 percent and increases the quantity demanded of pizza by 15 percent.

- a) Calculate the income elasticity demand for pizza and breadsticks and interpret the coefficients.

3. If the price elasticity of demand for Crest Toothpaste is 2.3, then we can conclude that
- A. Colgate toothpaste is a reasonable substitute and will increase its share of the market by 2.3% if the price of Crest increases
 - B. If Crest increases the price by 1 percent, then the quantity demanded will decrease by at least 2.3%
 - C. If incomes of consumers increase by 1%, then the quantity demanded for Crest will increase by 2.3%
 - D. An increase in the price of Crest Toothpaste by 1% will increase the total revenues of the company by at least 2.3%
4. If the price of taxicab fare increases in price, then which of the following will necessarily occur?
- A. Total revenues for cab drivers will decrease
 - B. There will be a reduction in the number of people who will ride taxi-cabs
 - C. Consumers will increase their total expenditures on cab fares
 - D. New cab carriers will enter the market
5. The fewer substitutes for a good then
- A. the lower its cross elasticity of demand.
 - B. the higher its cross elasticity of demand.
 - C. the lower its price elasticity of demand.
 - D. the higher its price elasticity of demand
6. If the cross elasticity of demand for two goods is negative
- A. one of the goods is a normal good, and the other good is an inferior good.
 - B. both goods are normal goods.
 - C. the goods are substitutes.
 - D. the goods are complements.
7. If for good Z income elasticity is greater than 1, then demand for good Z is income _____, and good Z is a (n) _____ good.
- A. inelastic; normal
 - B. inelastic; inferior
 - C. elastic; normal
 - D. elastic; inferior
8. The coefficient of price elasticity of demand indicates
- A. a buyer's responsiveness to price changes.
 - B. the slope of the demand curve.
 - C. how far demand stretches over time.
 - D. the extent to which a demand curve shifts as incomes change.

Elasticity Worksheet

| Commodity | P_{x_1} | Q_{d_1} | P_{x_2} | Q_{d_2} |
|-----------|-----------|-----------|-----------|-----------|
| Beef | \$1.70 | 116,250 | \$1.50 | 123,750 |
| Shirts | \$8.10 | 197,500 | \$7.90 | 202,500 |
| Radios | \$40.00 | 9,950 | \$39.80 | 10,050 |

Calculations of Demand Elasticity

| Commodity | % Decrease in P_x | % Increase in Q_d | Elasticity |
|-----------|---------------------|---------------------|------------|
| Beef | | | |
| Shirts | | | |
| Radios | | | |

Relationships with Total Revenue

| Commodity | TR-1 | TR-2 | Change in TR | Elasticity |
|-----------|------|------|--------------|------------|
| Beef | | | | |
| Shirts | | | | |
| Radios | | | | |

1. There are price supports (price supports are price floors) on some agricultural products – wheat, rice, and milk for example. In some cases, the government is committed to buying any surplus production that result. Why should Congress be interested in whether demand for these products is price elastic or inelastic?

6. The relationship between per capita income and quantity of waffle irons sold per month is given below.

| Income | Quantity demanded | Income Elasticity (I_d) |
|--------|-------------------|-----------------------------|
| \$4000 | 900 | |
| \$3000 | 700 | |
| \$2000 | 500 | |

- Calculate the income elasticity coefficient for each of the changes in income
- Are waffle irons normal or inferior goods? Explain how you know
- If the economies were to experience a recession and as a result incomes decrease, what will happen to demand for waffle irons?

8. The following data shows how changes in the prices of products X and Y affect the quantity of product Z demanded

| Price of X | Price of Y | Quantity of Z demanded |
|------------|------------|------------------------|
| \$1.20 | \$5.00 | 22,000 |
| \$1.30 | \$3.00 | 18,000 |

- Are X and Z substitutes or complements? Are Y and Z substitutes or complements? Explain how you know
- What is the cross elasticity of demand for Z and X?