Elasticity of Demand
Homework

DIRECTIONS

The elasticity of demand measures how much the quantity demanded changes when other factors change. Economists usually consider three factors: the price, the price of a substitute or complement, and consumer income. Use the formulas for each of these factors to calculate the elasticity of demand in each problem.

PRICE ELASTICITY OF DEMAND

This type of elasticity measures how sensitive consumers are to a change in price. Calculate the coefficient of elasticity using this formula, then determine whether the item is inelastic, unit elastic, or elastic. Coefficients below 1 are inelastic; coefficients equal to 1 are unit elastic; and coefficients above 1 are elastic.

$$\text{Price Elasticity of Demand} = \frac{\dfrac{Q_2 - Q_1}{(Q_1 + Q_2) / 2}}{\dfrac{P_2 - P_1}{(P_1 + P_2) / 2}}$$

1) John sells apples at a roadside stand. Right now, he charges $0.25 per apple and sells 500 apples each day. After talking to his customers, he thinks he can raise his price to $0.50 per apple and still sell 400 apples each day.

Coefficient of Elasticity: _____

Inelastic/Unit Elastic/Elastic: _____

2) John also sells oranges at his roadside stand. Right now, he charges $0.40 per orange and sells 200 oranges each day. After talking to his customers, he thinks he can sell 300 oranges a day if he lowers the price to $0.30 per orange.

Coefficient of Elasticity: _____

Inelastic/Unit Elastic/Elastic: _____

3) John also sells peaches at his roadside stand. Right now, he charges $0.60 per peach and sells 49 peaches each day. After talking to his customers, he thinks he can raise his price to $0.90 per peach and still sell 35 peaches each day.

Coefficient of Elasticity: _____

Inelastic/Unit Elastic/Elastic: _____

CROSS-PRICE ELASTICITY OF DEMAND

This type of elasticity measures how much quantity changes in Product X when the price of Product Y changes. Positive coefficients indicate substitutes; negative coefficients indicate complements; and a coefficient of zero means the products are unrelated.

$$\text{Cross-Price Elasticity of Demand} = \frac{\dfrac{Q_2 - Q_1}{(Q_1 + Q_2) / 2}}{\dfrac{P_2 - P_1}{(P_1 + P_2) / 2}}$$

4) John's roadside stand is across the street from a grocery store. When the grocery store raises its price on apples from $0.39 to $0.45, John notices that the quantity of apples that he sells rises from 400 to 600 apples.

Coefficient of Elasticity: _____

Substitutes/Complements/Unrelated: _____

5) When the grocery store raises its price on oranges from $0.75 to $0.85, John notices that the quantity of apples he sells actually goes down from 400 to 350 apples.

Coefficient of Elasticity: _____

Substitutes/Complements/Unrelated: _____

INCOME ELASTICITY OF DEMAND

This type of elasticity measures how much quantity changes as consumer incomes change. Positive coefficients mean the item is a normal good and negative coefficients mean the item is an inferior good.

$$\text{Income Elasticity of Demand} = \frac{\dfrac{Q_2 - Q_1}{(Q_1 + Q_2) / 2}}{\dfrac{I_2 - I_1}{(I_1 + I_2) / 2}}$$

6) John notices that the quantity of peaches he sells each day has increased from 45 to 55 peaches. He assumes this is the result of people's average weekly earnings increasing from $700 to $900.

Coefficient of Elasticity: _____

Normal Good or Inferior Good: _____

7) John has also noticed that during the last recession, his sales of apples actually increased from 400 to 480 apples each day. During that recession John estimated that people's average weekly earnings decreased from $700 to $620.

Coefficient of Elasticity: _____

Normal Good or Inferior Good: _____