

Winthrop University
College of Business Administration

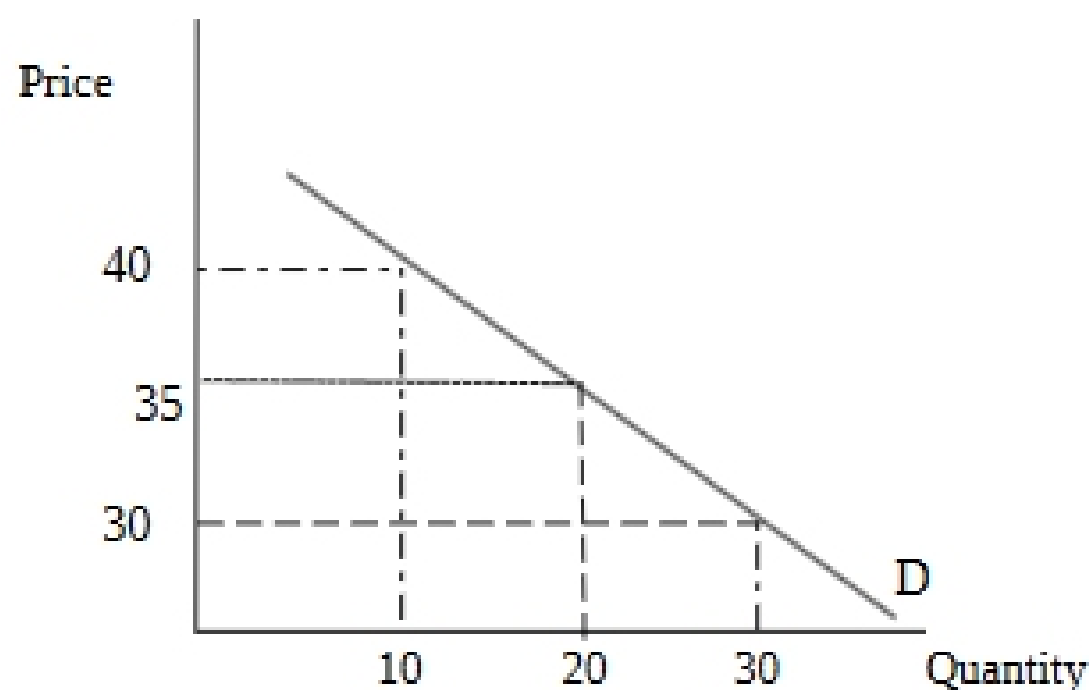
Principles of Microeconomics
Notes on Elasticity

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Price Elasticity Notes

If the price of Good X increases, does that cause consumers to demand less of Good X? Typically the answer to that question is YES. However, elasticity answers the question of “by how much?” If the price of gas rose to \$10 per gallon it would cause the quantity of gas demanded by consumers to decrease, but by how much? If the price of pizza fell to \$5 a pie the quantity demanded of pizza by consumers would increase, but by how much?

In the graph below the when the price of x falls from \$40 to \$35 the quantity demanded rises from 10 to 20. The elasticity simply measures the impact of a percentage change in price on the percentage change in quantity demanded.



arc price elasticity measures the affect that a change in the price of good X has on the quantity demanded of good X.

$e_p < -1$ elastic quantity demanded is sensitive to changes in the price of the good

lowering the price will bring in more revenue

$e_p = -1$ unit elastic

where revenue is maximized

$0 > e_p > -1$ inelastic

people tend to buy the product even if the producer raises their price

an increase in the price will increase revenue

The arc price elasticity formula can be written in two ways

(1) $E_p = \text{change in } Q / \text{average } Q * \text{average } P / \text{change in price}$

(2) $E_p = \text{percent change in } Q / \text{percent change in } P$

	Price	Quantity	Total Revenue	Point	Elasticity	Elasticity	Interpretation
A	40	10	400				
B	35	20	700	A to B	-5	elastic	
C	30	30	900	B to C	-2.6	elastic	
D	25	40	1000	C to D	-1.57	elastic	
E	20	50	1000	D to E	-1	unit elastic	
F	15	60	900	E to F	-0.63	inelastic	
G	10	70	700	F to G	-0.38	inelastic	

Using formula (1) we solve for the arc price elasticity going from point A to point B along a demand curve.

$$E_p = (10)/(15) * (37.5)/(-5) = -5$$

Change in quantity - from 10 to 20 is a change of 10

Average quantity – the average of 10 and 20 is 15

Average price – the average of 35 and 40 is 37.5

Change in price – from 40 to 35 is a drop of 5.

Interpretation: if elasticity = -5

A one percent increase in the price of good X causes a 5 percent **decrease** in the **quantity demanded** of Good X.

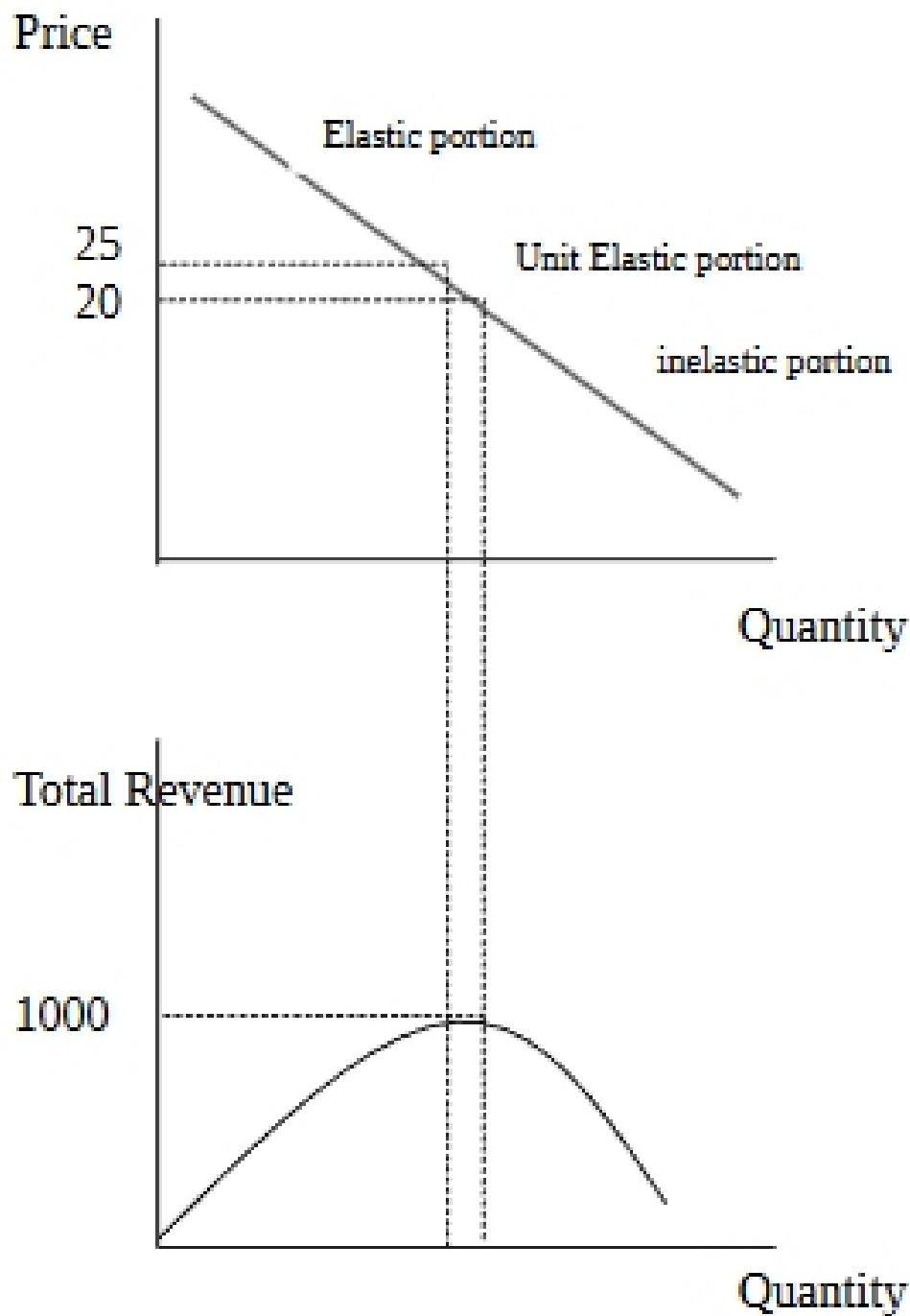
Try to solve for elasticities going from point B to C, C to D, D to E etc. Check your answers with the table above.

Price elasticities will always be negative because the law of demand states the inverse (negative) relationship between price and quantity.

Determinants of Elasticity

1. Substitutability – the more substitutes available the more elastic. If Coke raises their prices people may simply stop buying Coke and start buying Pepsi.
2. Percent of income – the larger the percent of income a good or service makes up, the more elastic the good or service. If the price of brick goes up it will impact the building of a brick home more than if the price of nails go up. The brick makes up a larger percentage of the buying income than the nails.
3. Time – the longer the time frame the more elastic. If you have more time to shop, you will be more price conscience.
4. Type of good – luxury items or more elastic than necessity items.

Relationship between total revenue and price elasticity.



All linear demand curves have different elasticities at different prices. In all linear demand curves there are segments where prices are elastic, there is a range of unit elastic, and there is a range where price elasticity is inelastic.

Responses of Total Revenue

Demand	Price Increases	Price Decreases
Elastic	Total revenue decreases	Total revenue increases
Unit Elastic	Total revenue decreases	Total revenue decreases
Inelastic	Total revenue decreases	Total revenue decreases

Notice, in the elastic portion of the demand curve if prices go up total revenue goes down. Get the rest of the relationships from the table above.