

Exercises 4

Elasticities (chap. 6)

Classroom exercises: Exercises 4.1 to 4.7

Home exercises: Exercises 4.8-to 4.23.

Classroom exercises

Exercise 4.1 (Final exam 30/01/2007 Problem 2)

The table shows the demand for good X.

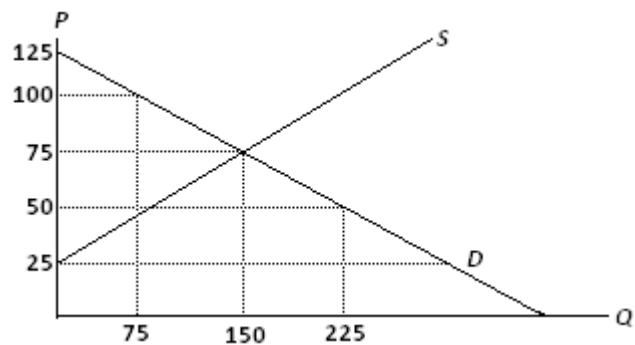
Preço	Quantidade
4,4	32.000
4,0	36.000
3,6	40.000
3,2	44.000

- a) Draw the demand curve, and use the midpoint method to calculate the price-elasticity of demand when the price falls from (1) 4.4 to 4, (2) 4 to 3.6, and (3) from 3.6 to 3.2.
- b) From an economic point of view comment the changes in elasticity as we move down the curve from (1) to (2) to (3).
- c) Calculate consumers' total expenditure at each price listed in the table. Explain the relation between the expenditure you calculated and the values you found for the elasticity in part a).

Exercise 4.2 (Exam 9-6-2009)

In the market shown in the accompanying figure, what is the midpoint price-elasticity of supply when the price increases from 50 to 75?

- a) 1.5;
- b) 2;
- c) 1.66(6);
- d) There is not enough information to answer the question.



Exercise 4.3 (In-term test 6/5/2008 E.M.2)

You run a nightclub, and revenue has been disappointing. The bouncer suggests that if you increase beverage prices at the bar revenue will increase, whereas the barman argues the opposite, that a reduction in prices will increase revenue. You are unsure as to who is right, but you become certain that:

- a) The bouncer is thinking that demand for beverages is elastic, whereas the barman is thinking it is inelastic;
- b) The bouncer is thinking that demand for beverages is inelastic, whereas the barman is thinking it is elastic;
- c) Both the bouncer and barman are thinking demand for beverages is elastic;
- d) Both the bouncer and barman are thinking demand for beverages is inelastic

Exercise 4.4 (EXERC 2008-9 n° 8)

A hot dog seller faces a daily demand curve given by the equation $Q = 1800 - 15p$, where p denotes the price of a hot dog in cents, and Q denotes the number of hot dogs demand in a day.

- If the seller sells 300 hot dogs in a day, what is his revenue?
- What is the price-elasticity of demand for hot dogs at that point?
- If the seller wishes to increase revenue should he increase or decrease the price of a hot dog?
- What price will maximise his revenue?

Exercise 4.5

Mary's demand curve for shows, including movie theatre, is given by $Q = 100 - 5p$, whereas Daniel's is $Q = 200 - 10p$. Which of the following statements is false?

- For any price from 10 to 19 Mary spends less on shows than Daniel.
- Whenever the price falls Daniel's quantity demanded increases twice as much as Mary's.
- At any price Mary's price-elasticity of demand is half as much as Daniel's.
- When the price is 10 Mary spends 50, exactly half as much as Daniel's.

Exercise 4.6 (Exam 10-09-2015)

The demand curve for a certain good is given by $Q^D(p)=100/p^2 + 20/p$. What is the price-elasticity of demand when the price is €5?

- 1.
- 1.5.
- 2.4
- The information is not enough to answer the question.

Exercise 4.7 (Problem 4, Krugman and Wells, pg. 184)

The accompanying table lists the cross-price elasticities of demand for several goods, where the percent quantity change is measured for the first good of the pair, and the percent price change is measured for the second good.

Good	Cross-price elasticities of demand
Air-conditioning units and kilowatts of electricity	-0,34
Coke and Pepsi	+0,63
High-fuel-consuming sport-utility vehicles (SUV's) and gasoline	-0,28
McDonald's burger and Burger King burgers	+0,82
Butter and margarine	1,54

- Explain the sign of each of the cross-price elasticities. What does it imply about the relationship between the two goods in question?
- Use the information in the table to calculate how a 5% increase in the price of Pepsi affects the quantity of Coke demanded.
- Use the information in the table to calculate how a 10% decrease in the price of gasoline affects the quantity of SUVs demanded

Home exercises

Exercise 4.8 Textbook, Check Your Understanding 6-1, 1 e 2 (pg. 165)

Exercise 4.9 Textbook, Check Your Understanding 6-2, 1 a) e d) (pg. 174)

Exercise 4.10 Textbook, Check Your Understanding 6-3, 1 e 3 (pg. 177)

Exercise 4.11 Textbook, Check Your Understanding 6-4, 2 (pg. 180)

Exercise 4.12 (In-term test 27-28/10/2008 A E.M.16)

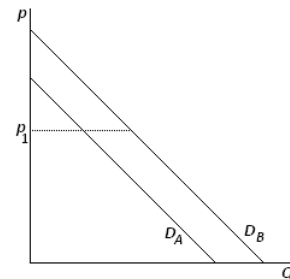
If price-elasticity of demand is 0.3 then:

- If the price rises 1% quantity demanded falls by 3%.
- If quantity demanded rises 1% the price falls by 0.3%.
- If quantity demanded rises 1% the price falls by 3%.
- If the price rises 1% quantity demanded falls by 0.3%.

Exercise 4.13 (Exam 05-01-2015)

Owing to higher consumers' income the demand curve in the figure shifts in a parallel fashion from D_A to D_B . At price p_1 which of the curves has a higher price-elasticity of demand in absolute value?

- D_A .
- D_B .
- Both curves have the same elasticity.
- The information is insufficient to answer.



Exercise 4.14 (In-term test 27-28/10/2008 B E.M.14)

Some airline companies increase fares as the date of the flight gets near. This means that the managers think that:

- Demand becomes more elastic as the date of the flight gets near.
- Demand becomes less elastic as the date of the flight gets near.
- Demand does not depend on air fares.
- Consumers are not fully aware of air fares.

Exercise 4.15 (In-term test 27-28/10/2008 B E.M.16)

If demand is elastic then:

- Price effect is greater than the quantity effect, and when the price falls revenue increases.
- Price effect is greater than the quantity effect, and when the price rises revenue increases.
- Quantity effect is greater than the price effect, and when the price falls revenue increases.
- Quantity effect is greater than the price effect, and when the price rises revenue increases.

Exercise 4.16 (Exam 26/01/2009 E.M.04)

Suppose price-elasticity of demand for a magazine annual subscription when the price is between €26 to €30 is 1.6. What will happen if the subscription price increases from €28 to €30?

- Subscription revenue will increase.
- The magazine subscription becomes a normal good.
- Subscription revenue will fall.
- The magazine subscription becomes an inferior good.

Exercise 4.17 (In-term test 08/11/2010 E.M.15)

The cross-price elasticity between two complementary goods:

- a) Is always positive.
- b) Is always zero.
- c) Is always negative.
- d) May be positive or negative.

Exercise 4.18 (Exam 06-01-2014)

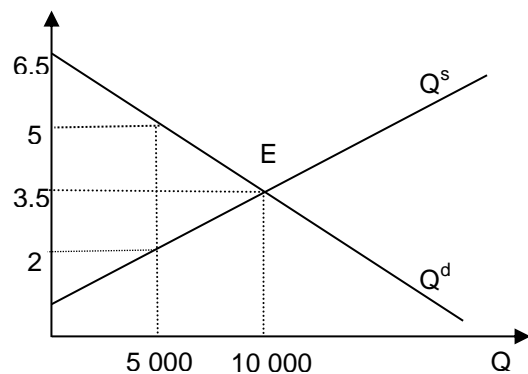
The cross-price elasticity of demand for newspaper *Goal* relative to the price of *The Ball* is 1.3. This means that if the price of the *The Ball* increases by 10%:

- e) Demand for *Goal* increases 13%.
- f) Demand for *Goal* falls by 13%.
- g) Demand for *The Ball* falls by 13%.
- h) None of the other alternatives is correct.

Exercise 4.19 (In-term test 08/11/2010 E.M.18)

The accompanying figure shows the demand and supply curves for a good. What is the midpoint price-elasticity of demand when the price increases from 3.5 to 5 (round to the nearest hundredth).

- a) 3.33.
- b) 1.89.
- c) 1.17.
- d) The information provided is not enough to calculate the elasticity.



Exercise 4.20 Textbook, Problem 1 (p. 176, 3rd Edition)

1. Nile.com, the online bookseller, wants to increase its total revenue. One strategy is to offer a 10% discount on every book it sells. Nile.com knows that its customers can be divided into two distinct groups according to their likely responses to the discount. The accompanying table shows how the two groups respond to the discount.

	Group A (sales per week)	Group B (sales per week)
Volume of sales before the 10% discount	1.55 million	1.50 million
Volume of sales after the 10% discount	1.65 million	1.70 million

- a. Using the midpoint method, calculate the price elasticities of demand for group A and group B.
- b. Explain how the discount will affect total revenue from each group.
- c. Suppose Nile.com knows which group each customer belongs to when he or she logs on and can choose whether or not to offer the 10% discount. If Nile.com wants to increase its total revenue, should discounts be offered to group A or to group B, to neither group, or to both groups?

Exercise 4.21 Textbook, Problem 3 (p. 184)

Exercise 4.22 (Exam 13-09-2013)

In the questions below use the midpoint method to calculate elasticities. Define the concepts you use and interpret your results.

a) We know that:

- When the price of good *Y* is €5 the quantity demanded of good *X* is 50.
- When the price of good *Y* is €4 the quantity demanded of good *X* is 70.

Find the cross-price elasticity of demand and explain whether the two goods are complements or substitutes.

b) We know that:

- When average income is €2000 quantity demanded of good *W* is 50,000.
- When average income is €2500 quantity demanded of good *W* is 40,000.

Find the income elasticity of demand and economically classify good *W*.

c) The elasticities of demand and supply influence how buyers and sellers share the burden of an excise tax. Explain and use appropriate diagrams to help your answer.

Exercise 4.23 (Exam 06-01-2014)

Musica.pt is a CD and DVD retailer, and sells all its products at €4 per unit. The firm wishes to increase revenue, and is considering a 10% discount on its sale price. The firm's customers belong to either group *A* or group *B*. The firm has estimated that each group will respond to the discount as shown in the table below.

	Number of CDs and DVDs sold monthly	
	Group A	Group B
Without discount	40 000	36 000
With a 10% discount	44 000	48 000

a) Find the midpoint price elasticity of demand of each group of costumers.

b) Assume the firm can tell the group each customer belongs to, and can give or not give the discount. What should the firm do to maximise revenue, give the discount to both groups, to none, or only to group *A* or group *B*? Explain.

c) Explain the relationship between the effect of the discount on revenue and the elasticities you found in part a).