МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ

НАЦІОНАЛЬНИЙ ТЕХНІЧНИЙ УНІВЕРСИТЕТ
«Харківський політехнічний інститут»

MICROECONOMICS

study guide to accompany
for students of specialty 073 «Management»

МІКРОЕКОНОМІКА

Практичні завдання з курсу
для студентів спеціальності 073 «Менеджмент»

Харків
НТУ «ХПІ»
2018

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Харків
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INTRODUCTION

This students' guidebook is worked out in accordance with the standards of higher education within the Bologna Process and meets the official requirement to academic program in course Microeconomics. Its main objective is to enlarge the students' knowledge on Microeconomic theory and encourage them to get in-depth understanding of key Microeconomic concepts. In microeconomics, we study the decisions of individual entities, such as households and firms. We also study how households and firms interact with each other.

The Guide is divided into nine units, following organization of the Tentative Course Outline found in the curriculum.

This book provides a self-study approach to understanding microeconomic theory. Intended audience is first-year students taking a course in microeconomics.

PART 1. INTRODUCTION TO MICROECONOMICS

Main questions

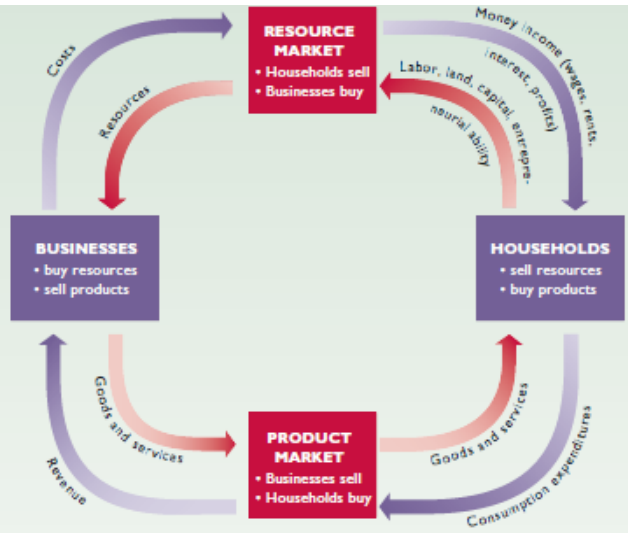
1. What is Microeconomics?
2. The Economics Problem.
3. The Circular Flow Model.

Key Terms

Economics	resource maintenance
production	distribution
consumption	positive questions
normative questions	intermediate goal
final goal	wealth
efficiency	well-being
economic actor (agent)	negative externalities
positive externalities	transaction costs
exchange	transfer
abundance	scarcity
production possibilities frontier (PPF)	opportunity cost
technological progress	core sphere
public purpose sphere	public goods
free riders	business sphere
informal sphere	microeconomics
macroeconomics	model
traditional microeconomic model	economistic thinking

Exercise 1.

A. ***Look at the circular flow diagram:***



Resources flow from households to businesses through the resource market, and products flow from businesses to households through the product market. Monetary flows take place opposite these real flows. Households receive income from businesses (their costs) through the resource market, and businesses receive revenue from households (their expenditures) through the product market.

For each question, mark the letter next to the correct answer.

1. Resource market is the place where:

a) households sell products and businesses buy products;

b) businesses sell resources and households sell products;

c) households sell resources and businesses buy resources (or services of resources);

d) businesses sell resources and households buy resources (or services of resources).

2. Which of the following would be determined in the product market?

a) a manager's salary;

b) the price of equipment used in a bottling plant;

c) the price of 80 acres of farmland;

d) the price of a new pair of athletic shoes.

3. In this circular flow diagram:

a) money flows counterclockwise;

b) resources flow counterclockwise;

c) goods and services flow clockwise;

d) households are on the selling side of the product market.

4. In this circular flow diagram:

a) households spend income in the product market;

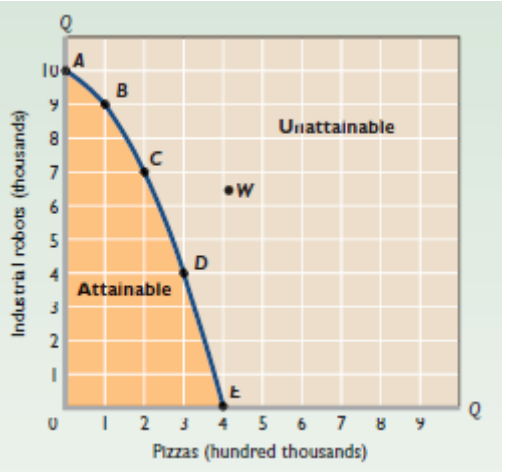
b) firms sell resources to households;

c) households receive income through the product market;

d) households produce goods.

B. ***Look at the production possibilities curve:***

Each point on the production possibilities curve represents some maximum combination of two products that can be produced if resources are fully employed. When an economy is operating on the curve, more industrial robots means fewer pizzas, and vice versa. Limited resources and a fixed technology make any combination of industrial robots and pizzas lying outside the curve (such as at *W*) unattainable. Points inside the curve are attainable, but they indicate that full employment is not being realized.



1. Production possibilities curve *ABCDE* is bowed out from the origin because:

a) the marginal benefit of pizzas declines as more pizzas are consumed;
b) the curve gets steeper as we move from *E* to *A;*
c) it reflects the law of increasing opportunity costs;
d) resources are scarce.

2. The marginal opportunity cost of the second unit of pizza is:

a) 2 units of robots;
b) 3 units of robots;
c) 7 units of robots;
d) 9 units of robots;

3. The total opportunity cost of 7 units of robots is:

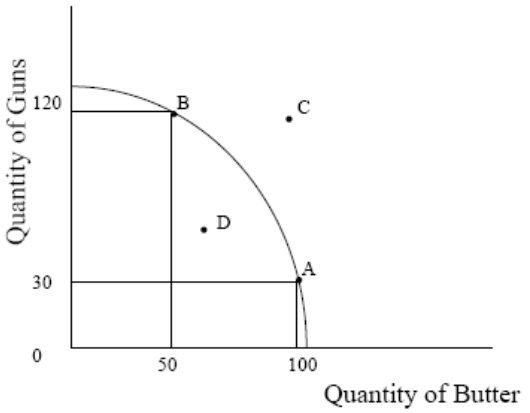
a) 1 unit of pizza;
b) 2 units of pizza;
c) 3 units of pizza;
d) 4 units of pizza;

4. All points on this production possibilities curve necessarily represent:

a) society's optimal choice;
b) less than full use of resources;
c) unattainable levels of output;
d) full employment.

Exercise 2.

Questions 1 to 5 refer to the production possibilities frontier shown below. If it is correct, mark True. If it is not correct mark False:



1. A diagram that shows the tradeoffs between production of two goods is called the production possibilities frontier.

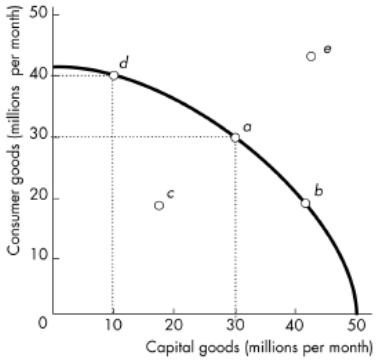
2. In the graph shown above, at point B, society is producing the maximum possible amount of butter.

3. To move from point A to point B, society would have to cut down on its gun production and increase butter production.

4. Starting from point B, society would have to invest substantial resources to increase gun production.

5. Watching a movie is an example of «consumption».

Exercise 3. ***For each question, mark the letter next to the correct answer.***



1. Refer to the production possibilities frontier in the figure above. Which point indicates that resources are NOT fully utilized or are misallocated?

a) Point *a*;
b) Point *b*;
c) Point *c*;
d) Point *e*;

2. Refer to the production possibilities frontier in the figure above. Which point is unattainable?

a) Point *a*;
b) Point *b*;
c) Point *c*;
d) Point *e*

3. Refer to the production possibilities frontier in the figure above. Point ____ represents an ____ point.

a) *b*; unattainable;
b) c; unattainable;
c) *e*; inefficient;
d) *c*; inefficient.

4. In the figure above, moving from point d to point a requires

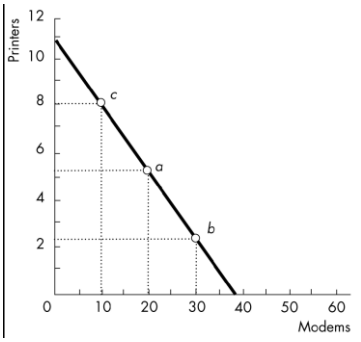
a) technological change;
b) a decrease in unemployment;
c) decreasing the output of consumer goods in order to boost the output of capital goods;
d) both capital accumulation and a decrease in unemployment.

5. Refer to the production possibilities frontier in the figure above. Suppose a country is at point a. A movement to point ____ means that the country ____.

a) *d*; must give up 20 million capital goods;
b) *e*; is not operating efficiently;
c) *d*; gives up 10 million consumer goods;
d) *b*; is producing at an inefficient point.

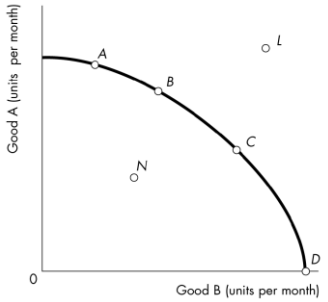
6. Refer to the production possibilities frontier in the figure above. If the country moves from point a to point c, the opportunity cost of the move is

a) 30 million capital goods;
b) 20 million capital goods;
c) 10 million capital goods;
d) 10 million consumption goods.



7. Vicky currently produces at point a in the figure above. If Vicky moves from point a to point b to point c, her opportunity cost of a modem ____.

a) decreases;
b) increases;
c) is zero;
d) remains the same.



8. Point C on the production possibilities frontier in the above diagram illustrates

a) a point with maximum and efficient production of Goods A and Goods B;

b) a combination of goods and services that cannot be produced efficiently;

c) all goods and services that are desired but cannot be produced due to scarce resources;

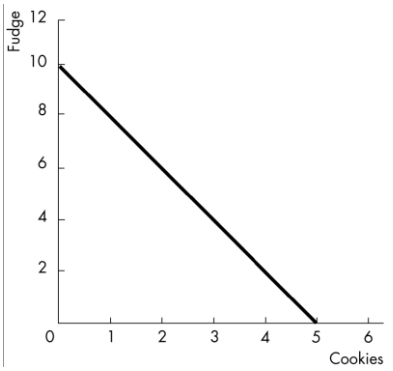
d) an underutilization of resources.

9. In the above figure, which point represents an unattainable production combination of the two goods?

a) Point C;
b) Point L;
c) Point D;
d) Point N.

10. In the above figure, which point represents an attainable but inefficient production point?

a) Point C;
b) Point N;
c) Point L;
d) Point D.



11. The figure above shows Freda's PPF. Freda currently produces 10 packets of fudge and no cookies. If Freda decides to produce 1 packet of cookies, her opportunity cost of the packet of cookies is ____ of fudge.

a) 1 packet;
b) 1/2 packet;
c) 2 packets;
d) 0 packets.

12. A tradeoff is:

a) represented by a point inside a *PPF*;
b) represented by a point outside a *PPF*;
c) a constraint that requires giving up one thing to get another;
d) a transaction at a price either above or below the equilibrium price.

13. A tradeoff is illustrated by:

a) a point inside the PPF;
b) a point outside the PPF;
c) a change in the slope of the PPF;
d) the negative slope of the PPF.

14. Ted can study for his economics exam or go to a concert. He decides to study for his economics exam instead of going to the concert. The concert he will miss is Ted's ____ of studying for the exam.

a) opportunity cost;
b) explicit cost;
c) implicit cost;
d) discretionary cost.

15. Opportunity cost is:

a) the best choice that can be made;
b) the highest-valued alternative forgone;
c) the monetary cost;
d) the indirect cost.

Exercise 4. ***Solve problems.***

Problem 1

A series of points that define production possibility frontier of an economy for goods Y and X are listed in the table below.

Y	1000	900	800	700	600	500	400	300	200	100	0
X	0	1600	2500	3300	4000	4600	5100	5500	5750	5900	6000

a) Plot these points to scale, on graph paper.

b) What is the opportunity cost of producing 100 more Y at the combination (X = 5500;Y = 300)?

c) Next we assume that there is technological change so that at every output level of good Y the economy can produce 20 percent more X. Compute the coordinates for the new economy and plot the new PPF.

d) Using the PPF that you have graphed and using the data in the preceding question, determine whether the following combinations are attainable or not (X =3000;Y =720), (X =4800;Y =480), (X =7000;Y =300)?

Problem 2

Draw a graph to show the relationship between two variables x and y:

x	0	1	2	3	4	5	6	7	8
y	0	1	4	9	16	25	36	49	64

a) Is the relationship positive or negative?

b) Describe the relationship, and think of some economic interrelations that it might illustrate.

Problem 3

Draw a graph that shows the relationship between two variables *x* and y:

x	0	1	2	3	4	5
y	25	24	22	16	8	0

a) Is the relationship positive or negative?

b) Describe the relationship, and think of some economic relationships that it might illustrate.

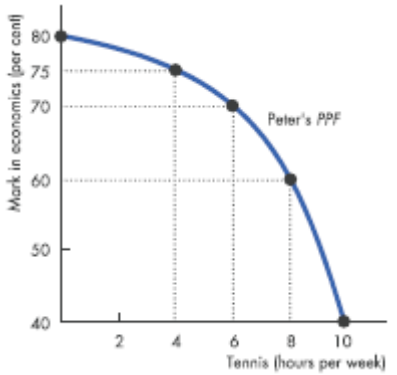
Problem 4

The figure below shows Peter's *PPF*.

Use the graph to calculate Peter's opportunity cost of an hour of tennis when he increases the time he plays tennis from

a) 4 to 6 hours a week.

b) 6 to 8 hours a week.



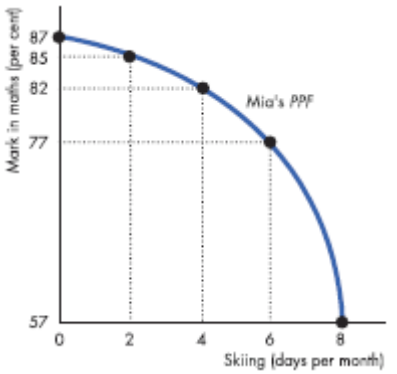
Problem 5

The figure shows Mia's *PPF*.

Use the graph to calculate Mia's opportunity cost of a day of skiing when she increases her time spent skiing from

a) 2 to 4 days a month.

b) 4 to 6 days a month.



Problem 6

The table sets out Leisureland's production possibilities.

Food (kilograms per month)	Sunscreen (litres per month)
300	0
200	50
100	100
0	150

a) Draw a graph of Leisureland's production possibilities frontier.

b) What are Leisureland's opportunity costs of producing food and sunscreen at each output in the table?

Problem 7

The table sets out Jane's production possibilities.

Wheat (kilograms per month)	Cloth (metres per month)
3	0
2	2
1	4
0	6

a) Draw a graph of Jane's *PPF*.

b) What are Jane's opportunity costs of producing wheat and cloth at each output in the table?

Problem 8

Below is a production possibilities table for consumer goods (automobiles) and capital goods (forklifts):

Type of Production	Production Alternatives				
	A	B	C	D	E
Automobiles	0	2	4	6	8
Forklifts	30	27	21	12	0

a) Show these data graphically.

b) If the economy is at point *C*, what is the cost of two more automobiles? Of six more forklifts?

c) If the economy characterized by this production possibilities table and curve were producing 3 automobiles and 20 forklifts, what could you conclude about its use of its available resources?

d) What would production at a point outside the production possibilities curve indicate? What must occur before the economy can attain such a level of production?

PART 2. DEMAND, SUPPLY AND MARKET EQUILIBRIUM

Main questions

1. Demand.
2. Elasticity of Demand.
3. Supply.
4. Elasticity of Supply.
5. Market Equilibrium.

Key Terms

empirical investigation
theories
historical investigation
market supply
change in quantity supplied
nonprice determinants of supply
effective demand
individual demand
change in demand
nonprice determinants of demand
complementary good
equilibrium
theory of market adjustment
static model
signaling function of markets and prices
market incentives
precise
price floor
price inelastic demand
price elastic demand
perfectly elastic demand curve
price elasticity of supply
inferior goods
income effect of a price change
substitution effect of a price change
time series data
theoretical investigation
supply curve
individual supply
change in supply
demand curve
market demand
change in quantity demanded
derived demand
substitute good
surplus
shortage
disequilibrium
dynamic model
rationing
inadequacy
accurate
price ceiling
elasticity
perfectly inelastic demand curve
price-taker
normal goods
income elasticity of demand
short-run elasticity
long-run elasticity

Exercise 1.

For each question, mark the letter next to the correct answer.

1. If demand decreases and supply decreases, then in the short-run

a) both equilibrium price and equilibrium quantity increase;

b) both equilibrium price and equilibrium quantity decrease;

c) equilibrium price increases and equilibrium quantity decreases;

d) equilibrium quantity decreases and equilibrium price can either increase or decrease.

2. Law of supply states that

a) as price increases supply decreases;

b) as price increases quantity supplied increases;

c) as price increases quantity supplied decreases;

d) as price increases quantity demanded decreases.

3. A normal good is the one a demand for which

a) does not change after an increase in income;

b) increases after an increase in income;

c) decreases after an increase in income;

d) decreases after an increase in supply.

4. Which of the following would not permanently affect demand?

a) weather;

b) expected future prices;

c) income;

d) prices of substitutes and complements in consumption.

5. Suppose we observe a decrease in orange prices. Which of the following is *not* a possible cause?

a) a decrease in apple prices;

b) a freeze in Florida;

c) an increase in the number of orange growers;

d) an increase in prices of furniture made from orange trees.

6. If congress debates a ban on flip-flops, what would one expect to see happening?

a) an increase in demand for flip-flops and a decrease in supply of flip-flops;

b) a decrease in demand for flip-flops and an increase in supply of flip-flops;

c) an increase in demand for flip-flops and an increase in supply of flip-flops;
d) a decrease in demand for flip-flops and a decrease in supply of flip-flops;
e) none of the above.

7. If population increases and the number of firms decreases, what would one expect to see happening to equilibrium price and quantity?

a) price increases and quantity decreases;
b) price increases and quantity increases;
c) quantity increases and the price change is ambiguous;
d) price increases and the quantity change is ambiguous;
e) none of the above

8. Price floors are typically favored by

a) suppliers;
b) demanders;
c) government;
d) foreign investors;
e) none of the above.

9. Which of the following is a result of a price ceiling?

a) excess supply;
b) long lines or wait times for consumers;
c) cost of removal of excess supply;
d) cost of shifting resources away from their comparative advantage;
e) producers sell their products at higher prices.

10. Minimum wage laws are an example of the following kind of market control

a) quota;
b) price floor;
c) price ceiling;
d) cruise control;
e) none of the above.

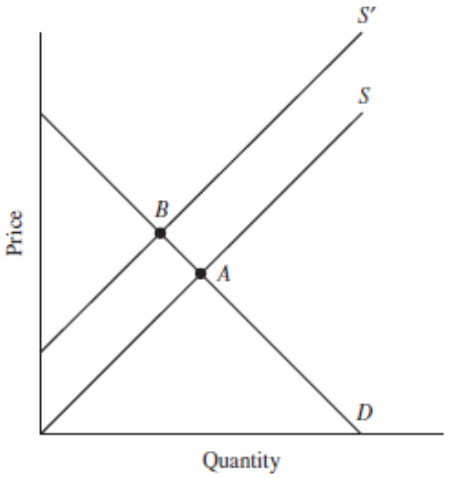


Figure 1

11. Figure 1 depicts two market equilibria. Equilibrium *A* is original equilibrium, and Equilibrium *B* is new equilibrium. Which of the following is a possible explanation for the change?

a) an increase in price of a complement;
b) an increase in price of a substitute in consumption;
c) an increase in income of consumers;
d) an increase in price of a vital component of a good.

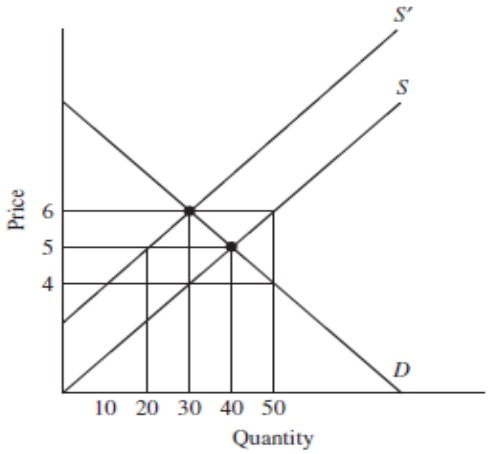


Figure 2

12. Use Figure 2. Suppose the government proposes to impose a $2.00 per unit tax. How it will influence the quantity sold in the market?

a) it increases by 10;
b) it decreases by 20;
c) it decreases by 10;
d) it decreases by 30;
e) it does not change.

13. In the market depicted in Figure 2, what is the total tax revenue generated by the $2.00 tax?

a) 80;
b) 40;
c) 45;
d) 60;
e) 30.

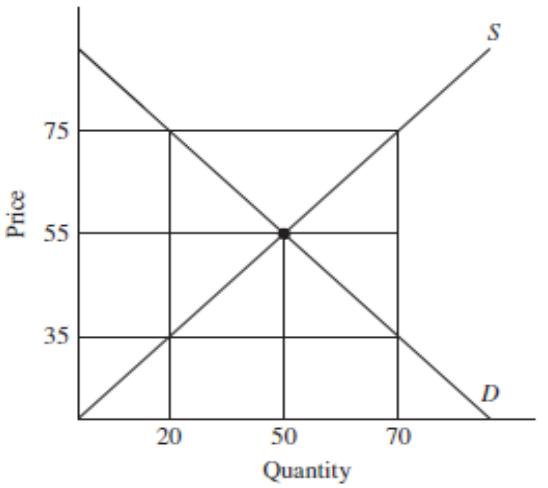


Figure 3

14. Use Figure 3. Suppose the government proposes to impose a price floor. What price is most likely to be chosen?

a) 75;
b) 55;
c) 35;
d) 0.

15. Use Figure 3. If the government proposes to impose a price ceiling, which price is most likely to be chosen?

a) 75;
b) 55;
c) 35;
d) 0.

Exercise 2. ***Solve problems.***

Problem 1

Let's consider market demand for a commodity, when there are four buyers.

Draw a market demand curve D, which is a result of summation of individual horizontal demand curves (D1, D2, D3, D4) of all consumers in the market.

Price	Quantity Demanded by				Total Quantity Demanded
	Person 1	Person 2	Person 3	Person 4	
$ 0.01	10	17	13	20	
$ 0.10	7	16	10	17	
$ 0.20	5	15	5	15	
$ 0.30	4	8	4	14	
$ 0.40	2	6	3	9	
$ 0.50	1	3	1	5	

Problem 2

Let's consider market supply for a commodity, when there are three sellers.

Draw a market supply curve D, which is summation of individual horizontal supply curves (S1, S2, S3) of all manufacturers in the market.

Price	Quantity Supplied by			Total Quantity Supplied
	Firm 1	Firm 2	Firm 3	
$ 0.01	10	17	13	
$ 0.10	7	16	10	
$ 0.20	5	15	5	
$ 0.30	4	8	4	
$ 0.40	2	6	3	
$ 0.50	1	3	1	

Problem 3

Find equilibrium price and equilibrium quantity in the market whose supply and demand curves are given by $P=4Qs$ and $P=12 - 2Qd$, respectively.

Problem 4

The market for DVDs has supply and demand curves given by $Ps = 2Qs$ and $Pd = 42 - Qd$, respectively.

a) How many units will be traded at a price of $35? At a price of $14? Which participants will be dissatisfied at these prices?

b) What quantity of DVDs at what price will be sold in equilibrium?

c) What is the total revenue from DVD sales?

Problem 5

Suppose the demand function for corn is $Qd\ corn = 15 - 2Pcorn$ and the supply function is $Qscorn = 5Pcorn - 6$. What is the equilibrium price of corn? What are the amounts bought and sold? What is the corn sales revenue if the government establishes a fixed price of $4 or $2?

Problem 6

Suppose the demand function for corn is $Qd\ corn = 20 - 2Pcorn$ and the supply function is $Qscorn = 1.6Pcorn - 7$. What is the equilibrium price of corn? What is the

amount of corn bought and sold? What is the corn sales revenue if the government establishes a fixed price of $5?

Problem 7

Supply and demand data for concerts are shown below.

Price	$20	$24	$28	$32	$36	$40
Quantity demanded	10	9	8	7	6	5
Quantity supplied	1	3	5	7	9	11

a) Plot the supply and demand curves to scale and establish the equilibrium price and equilibrium quantity.

b) What is the excess supply or demand when price is $24? When price is $36?

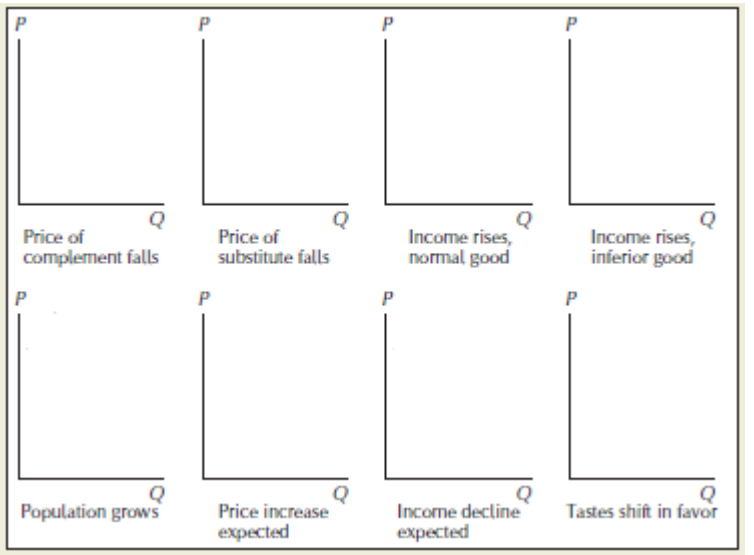
c) Describe the market adjustments in price induced by these two prices.

d) The functions underlying the example in the table are linear and can be presented as P = 18+2Q (supply) and P = 60 - 4Q (demand). Solve the two equations for the equilibrium price and equilibrium quantity values.

Exercise 3. ***Solve problems.***

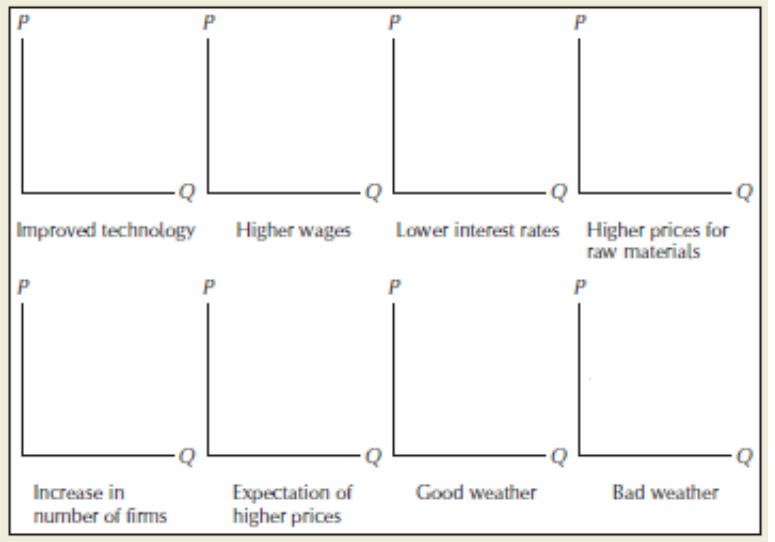
Problem 1. Factors That Shift Demand Curves

Prices of substitutes and complements, incomes, population, expectation of future prices and income changes, and consumer tastes – all these factors influence the position of current demand curve for a product.



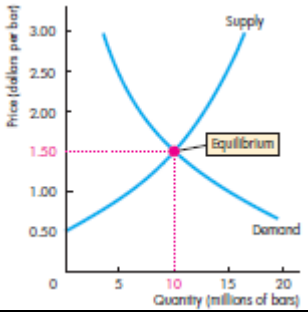
Problem 2. Factors That Shift Supply Curves

Technology, input prices, number of firms, expectations about future prices, and weather – all these factors affect position of supply curve for a given product.

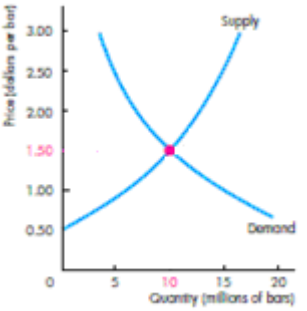


Problem 3. Effects of all the possible changes in demand and supply

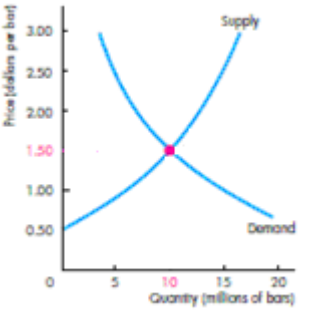
(a) No changes in demand or supply



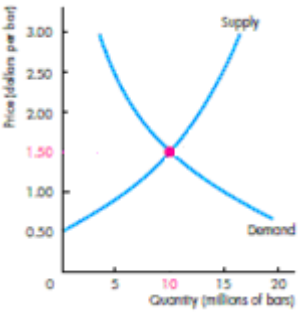
(b) Increase in demand



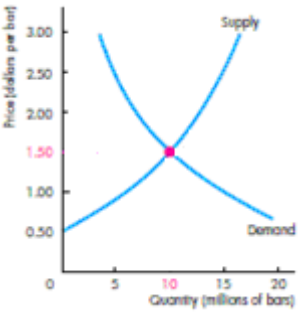
(c) Decrease in demand



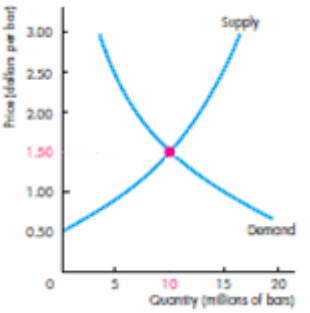
(d) Increase in supply

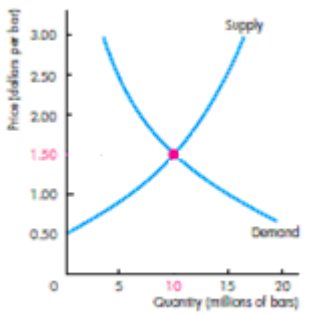
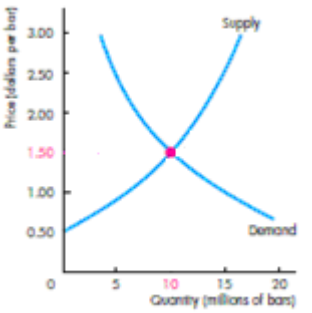
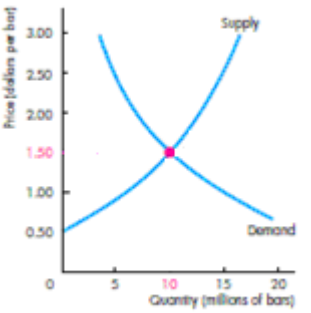


(e) Increase in both demand and supply



(f) Decrease in demand; increase in supply



(g) Decrease in supply	(h) Increase in demand; decrease in supply	(i) Decrease in both demand and supply
		

PART 3. CONSUMER BEHAVIOR

Main questions

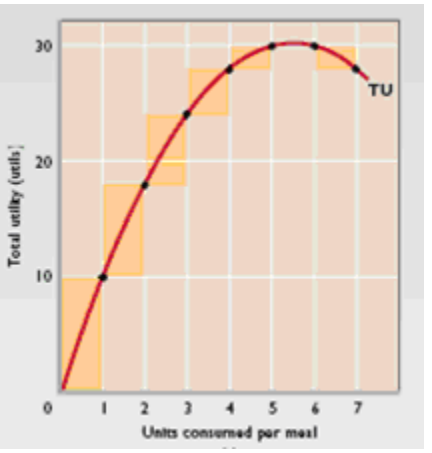
1. Total Utility and Marginal Utility.
2. Budget Line.
3. Consumer's Indifference Curve and Indifference Map.
4. Consumer's Equilibrium Position.

Key Terms

consumer sovereignty
attributes (characteristics)
reference group
aspirational group
real income
utility function
diminishing marginal utility
wants
capability approach
relative deprivation
living standard (lifestyle) goals
reference point
membership group
budget line
utility
utils
consumerist values
needs
absolute deprivation

Exercise 1.

A. *Look at the figure of total and marginal utility.*



a) Totai utility

b) Marginal utility

(1) Tacos Consumed per Meal	(2) Total Utility, Utils	(3) Marginal Utility, Utils
0	0	
1	10	10
2	18	8
3	24	6
4	28	4
5	30	2
6	30	0
7	28	−2

Curves TU and MU are graphed from the data in the table. (a) As more of a product is consumed, total utility increases at a diminishing rate, reaches a maximum, and then declines. (b) Marginal utility, by definition, reflects the changes in total utility. Thus marginal utility diminishes with increased consumption, becomes zero when total utility is at a maximum, and

is negative when total utility declines. As shown by the shaded rectangles in (a) and (b), marginal utility is the change in total utility associated with each additional taco. Or, alternatively, each new level of total utility is found by adding marginal utility to the preceding level of total utility.

For each question, mark the letter next to the correct answer.

1. Marginal utility:

a) is the extra output a firm obtains when it adds another unit of labor;

b) explains why product supply curves slope upward;

c) typically rises as successive units of a good are consumed;

d) is the extra satisfaction from the consumption of one more unit of some good or service.

2. Marginal utility is positive, but declining in Figure b, when in Figure a total utility is positive and:

a) rising at an increasing rate;

b) falling at an increasing rate;

c) rising at a decreasing rate;

d) falling at a decreasing rate.

3. When marginal utility is zero in graph (b), in graph (a) total utility is:

a) also zero;

b) neither rising nor falling;

c) negative;

d) rising, but at a declining rate.

4. Suppose the person represented by these graphs experienced a diminished taste for tacos. As a result:

a) TU curve would get steeper;

b) MU curve would get flatter;

c) TU and MU curves would shift downward;

d) MU curve, but not the TU curve, would collapse to the horizontal axis.

Exercise 2.

For each question, mark the letter next to the correct answer.

Questions № 1 and № 2 refer to the budget line graph below:

1. Dorothea has to allocate her budget between groceries and rent. Which of the following combinations can Dorothea afford?

a) 6 weeks of rent and 20 bags of groceries;
b) 6 weeks of rent and 10 bags of groceries;
c) 1 week of rent and 25 bags of groceries;
d) 5 weeks of rent and 18 bags of groceries;
e) 6 weeks of rent and no groceries.

2. Dorothea has to pay for a trip to the emergency room when her niece has an asthma attack. Now she has less money for groceries and rent. What happens to her budget line?

a) The slope increases;
b) The slope decreases;
c) The budget line does not change;
d) The budget line shifts toward the origin while the slope does not change;
e) The budget line pivots to the right.

3. Jane allocates her income between candy and soda. Something happens that causes her budget line to shift toward the origin without a change in slope. What could have caused this change?

a) Jane's income decreased;
b) The price of both candy and soda increased by the same percentage;
c) The price of candy increased;
d) Jane decided to buy more of both goods;
e) Both a and b are true.

4. Consumer sovereignty is the idea that:

a) Businesses should be consumer-oriented;
b) Consumers should be independent of the government;
c) Consumer satisfaction is the ultimate economic goal;
d) It's important to the economy for consumers to be employed independently;
e) Both a and c.

5. George buys a fashionable new outfit, hoping to impress his colleagues. In Maslow's hierarchy of needs, George can be said to be fulfilling a(n):

a) physiological need;
b) safety need;
c) esteem need;
d) self-actualization need;
e) basic need.

6. The assumption of rational consumer behavior is characteristic of:

a) the marketing view;
b) the utility theory view;
c) the traditional microeconomic view;
d) both a and c;
e) both b and c.

7. John divides his income between chips and salsa. If the prices of both chips and salsa decrease by the same proportion, which of the following statements is true?

a) the effect on John's budget line is the same as if his income had increased with no change in price;
b) the effect on John's budget line is the same as if his income had decreased with no change in price;
c) John's real income decreases;
d) John's utility decreases;
e) John's budget line pivots outward.

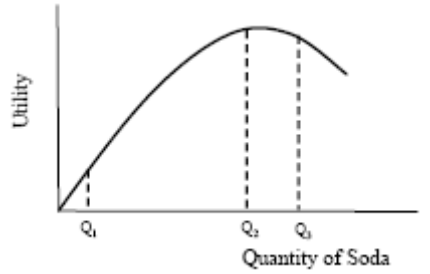
8. Which of the following is *not* an element of a consumer's decision-making process from a marketing perspective?

a) problem recognition;
b) information search;
c) evaluation of alternatives;
d) production decision;
e) post-purchase behavior.

9. According to the theory of consumer maximization of utility,

a) people's numeric assessments of utility are obtained from survey data;
b) people trade goods for utility;
c) people are assumed to act as if they were maximizing a quantifiable entity called utility;
d) marginal utility is always positive;
e) marginal utility increases as consumption of a good increases.

Question №10 refers to the following graph:



10. The graph above shows the total utility function of a student consuming bottles of soda. Which of the following statements is *false,* based on the information in this graph?

a) the marginal utility of an additional can of soda in the region from Q1 to Q2 is positive;

b) diminishing marginal utility first occurs at Q3;

c) soda consumption is characterized by diminishing marginal utility;

d) marginal utility is greater at Q1 than at Q2;

e) at Q3, an additional bottle of soda makes the student feel worse, not better.

11. At the utility-maximizing level of consumption,

a) the last dollar spent on each good produces the same marginal utility;

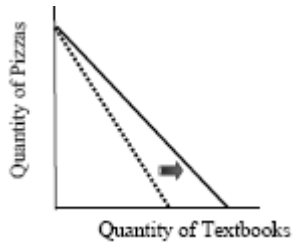
b) total expenditure equals total utility;

c) marginal expenditure is the same for both goods in question;

d) consumption is at competitive equilibrium;

e) marginal expenditure is equal to total utils.

Question №12 refers to the following graph:



12. Marnie allocates her income between pizzas and textbooks. The graph above shows Marnie's budget line. Which of the following events could produce the shift from the dotted line to the solid line?

a) a decrease in the price of textbooks;

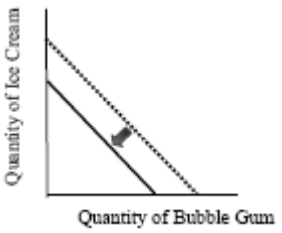
b) an increase in the price of textbooks;

c) an increase in the price of pizzas;

d) a decrease in the price of pizzas.

e) Marnie signing up for a class that requires her to buy more textbooks.

Question №13 refers to the following graph:



13. James allocates his income between bubble gum and ice cream. The graph above shows James' budget line. Which of the following events could cause James' budget line to shift inward, from the dotted line to the solid line?

a) a decrease in James' income;
b) an increase in James' income;
c) an increase in the price of bubble gum relative to ice cream;
d) an increase in the price of one good and a decrease in the price of the other;
e) none of the above.

14. Which of the following changes has tended to accompany and facilitate increased consumption?

a) increase in consumer credit;
b) decrease in advertising revenues;
c) increase in labor union power;
d) increase in political freedom;
e) reduction in government spending.

15. The marginal rate of substitution is defined as

a) the change in utility gained from a loss of a unit of a good;
b) the amount of a good needed to maintain a given level of utility when a unit of another good is taken away;
c) the amount of a good needed to obtain a higher level of utility when a unit of another good is taken away;
d) the amount of a substitute good consumed with complement goods.

16. The benefit or satisfaction that a person receives from the consumption of goods and services is called

a) marginal utility;
b) utility;
c) consumer demand;
d) consumer equilibrium.

17. If the price of petrol increases, what happens to the average household's real income?

a) it increases;
b) it does not change;
c) it decreases;
d) it is impossible to tell.

18. If a household wins the lottery, what will happen to the household's income constraint?

a) it disappears;
b) it shifts to the right because prices will drop;
c) it declines because there is less of a constraint;
d) it shifts to the right because income has increased.

19. Assume a household maximizes utility by purchasing 6 units of Good *X* and 3 units of Good *Y*. If the price of Good *X* increases and the price of Good *Y* decreases, what will likely happen to the household's mix of Good *X* and Good *Y* at its new equilibrium?

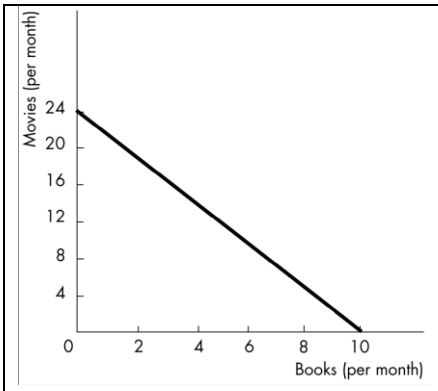
a) the amount of Good *X* will increase and the amount of Good *Y* will increase;
b) the amount of Good *X* will increase and the amount of Good *Y* will decrease;
c) the amount of Good *X* will decrease and the amount of Good *Y* will increase;
d) the amount of Good *X* will decrease and the amount of Good *Y* will decrease.

20. If widgets cost $5 and gadgets cost $10, what is the relative price of a widget to a gadget?

a) $1;
b) one half of a widget costs one tenth of a gadget;
c) two widgets cost one gadget;
d) one widget costs two gadgets;
e) one widget costs one gadget.

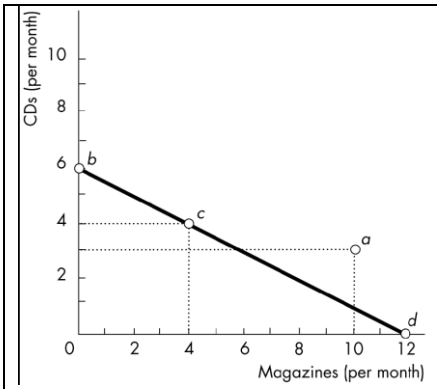
Exercise 3.

Look at the figure and for each question, mark the letter next to the correct answer.



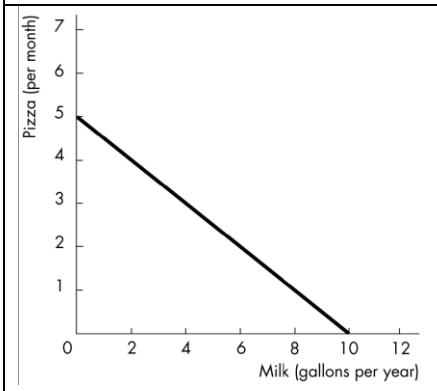
1) Consider the budget line in the figure. If the consumer's income is $120, then the price of a book is:

a) $10 per book;
b) $12 per book;
c) $6 per book;
d) More information is needed to determine the price of a book.



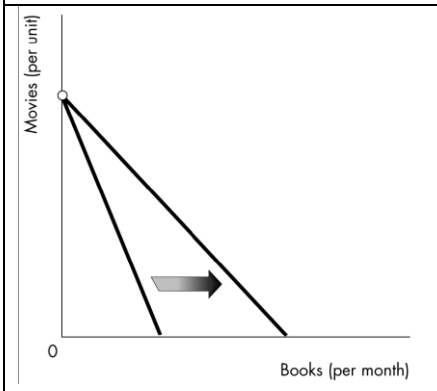
2) The figure gives your budget line between CDs and magazines. Which combination of CDs and magazines are not affordable?

a) combination *a;*
b) combination *b;*
c) combination *c;*
d) both combinations *b* and *d*.



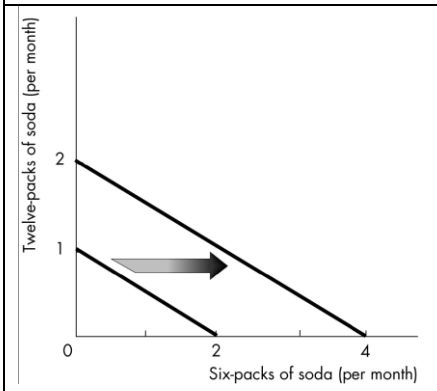
3) Given the budget line in the figure, which of the following combinations of pizza and milk are affordable?

a) 0 pizzas, 10 gallons of milk;
b) 2 pizzas, 6 gallons of milk;
c) 4 pizzas, 1 gallon of milk;
d) all of the above combinations are affordable.



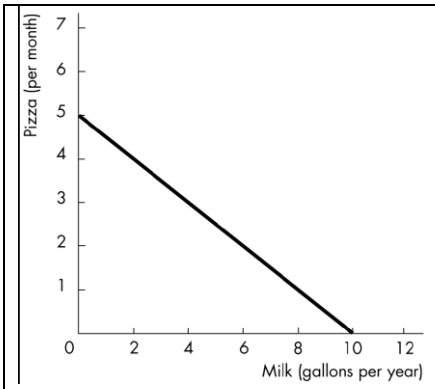
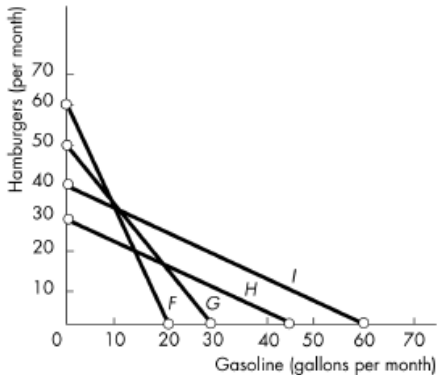
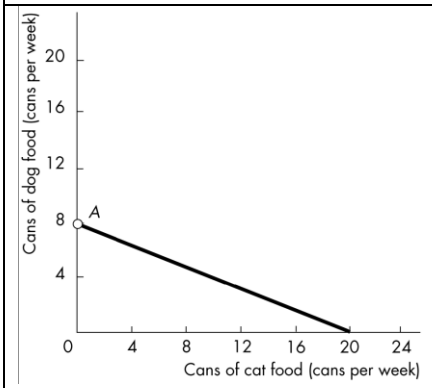
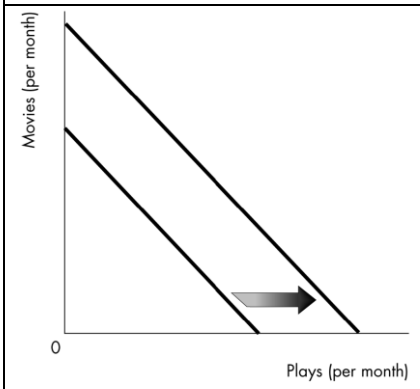
4) In the figure, the budget line would rotate in the direction indicated as a result of a:

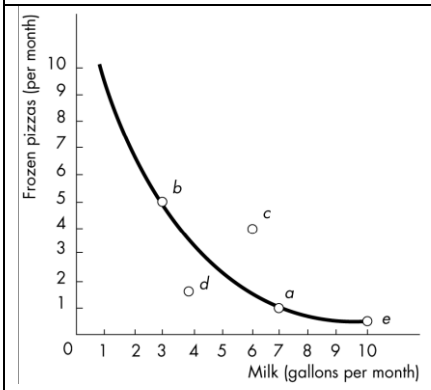
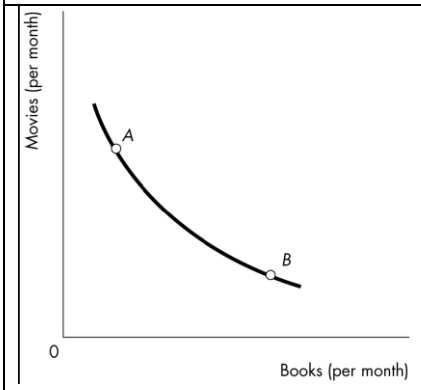
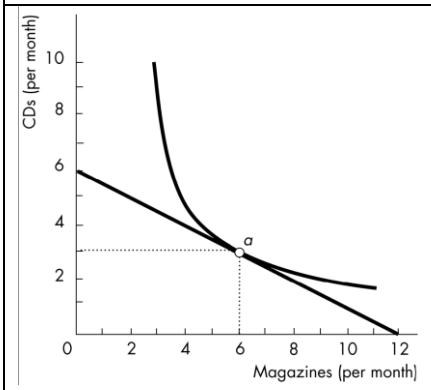
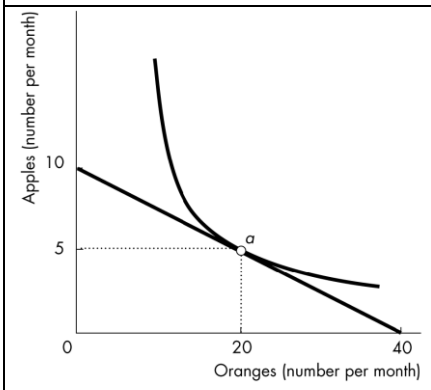
a) rise in the price of a book;
b) fall in the price of a book;
c) rise in the price of a movie;
d) decrease in income.

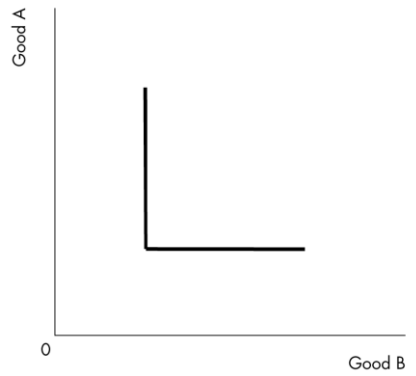
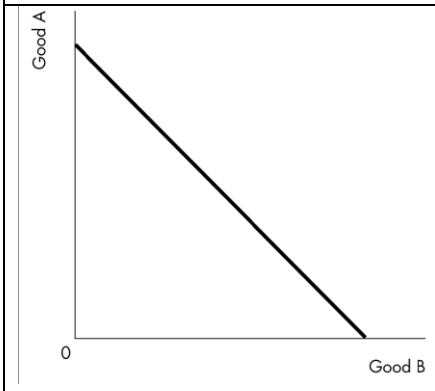
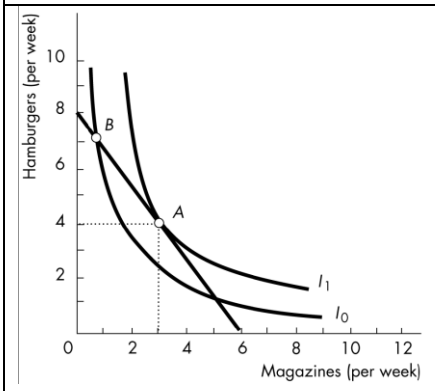
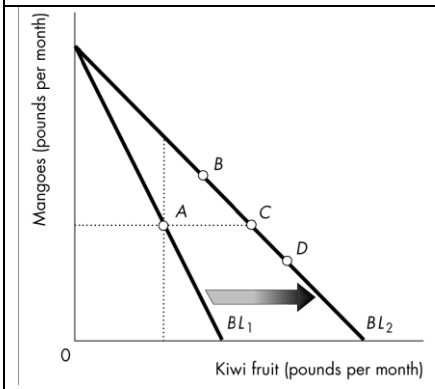


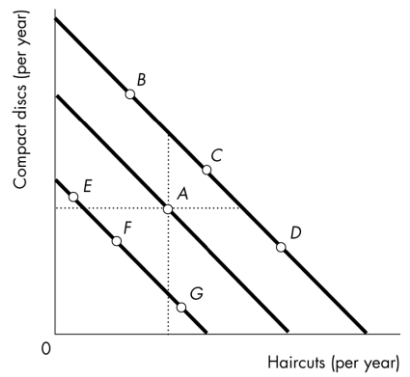
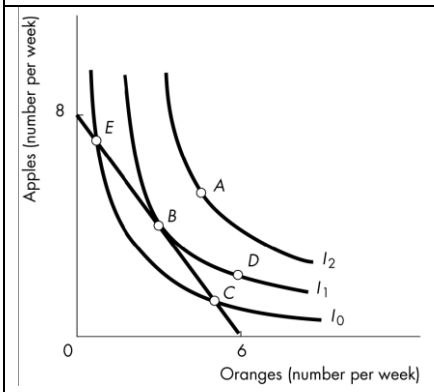
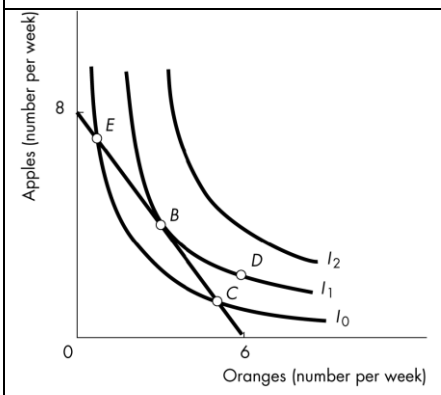
5) In the figure, a shift in the budget line in the direction indicated would occur as a result of:

a) decrease in money income;
b) increase in money income;
c) fall in the price of a movie;
d) rise in the price of movie.

	**6)** In the figure, if the price of milk rises, the budget line: a) rotates outward and the slope becomes steeper; b) shifts inward and its slope does not change; c) rotates inward and the slope becomes steeper; d) rotates inward and the slope becomes more shallow.
	**7)** In the above figure, if income is $45.00, the price of hamburgers is $1.50, and the price of gasoline is $1.00, then which is the correct budget line? a) F; b) G; c) H; d) I.
	**8)** The figure shows Ilene's budget line. The price of a can of cat food is $2. Ilene's income per week is: a) $10; b) $40; c) $56; d) $160.
	**9)** In the figure, Sheryl's monthly budget line for movies and plays shifted, as shown. Because the shift in the budget line is parallel, the shift might be because: a) the price of a movie fell and nothing else changed; b) the price of a play fell and nothing else changed; c) sheryl's income decreased and nothing else changed; d) sheryl's income increased and

	nothing else changed.
	**10)** Given the indifference curve in the figure, which point is preferred to point *a*? a) point *b*; b) point *c*; c) point *d*; d) point *e*.
	**11)** In the figure, the *MRS* at point *A* is ____ the *MRS* at point *B.* a) equal to; b) less than; c) greater than; d) not able to be compared to.
	**12)** In the figure, what is the marginal rate of substitution (*MRS*) at point *a*? a) –1/2; b) the rate at which the consumer will give up magazines to purchase more cds while preferring the new combination to the old; c) 2; d) the question cannot be answered without more information.
	**14)** The figure shows one of Sally's indifference curves and her budget line. At point *a*, Sally's marginal rate of substitution is ____. a) ¼; b) 4; c) 10; d) 40.

	**13)** The indifference curve in the figure: a) illustrates two goods that are perfect substitutes; b) illustrates two goods that are perfect complements; c) violates assumptions about preferences; d) none of the above answers is correct.
	**15)** The indifference curve in the figure: a) illustrates two goods that are perfect substitutes; b) illustrates two goods that are perfect complements; c) violates assumptions about preferences; d) none of the above answers is correct.
	**16)** Consider the budget line in the figure. If the price of a magazine is \$4, then the price of a hamburger is: a) \$1.75; b) \$3.00; c) \$4.00; d) \$5.33.
	**17)** In the figure, Reggie's budget line rotates outward from *BL*1 to *BL*2. He initially consumes at point *A*. If his new consumption bundle is at point *C*, this implies that his demand curve for kiwi fruit: a) has shifted; b) is a vertical line; c) slopes downward; d) is a horizontal line.

	**18)** In the figure, Brendan originally consumes at point *A*. If his income rises and both compact discs and haircuts are normal goods then he will begin consuming at a point such as: a) *F*; b) *B*; c) *C*; d) *D*.
	**19)** The figure illustrates Sally's budget line and her preferences. Point ____ is Sally's best affordable point, and Sally prefers point ____ to point ____. *a) A*; *B*; *A;* *b) E*; *C*; *B;* *c) B*; *A*; *B;* *d) B*; *B*; *D.*
	**20)** The figure illustrates Sally's budget line and her preferences. At point ____, the marginal rate of substitution is equal to the relative price. *a) B;* *b) E;* *c) D;* *d) C.*

Exercise 4. ***Solve problems.***

Problem 1

Suppose that utility depends on the square root of the amount of good X consumed: $U = \sqrt{X}$.

a) In a spreadsheet enter the values 1. . . 25 in the X column, and in the adjoining column compute the value of total utility corresponding to each quantity of X.

b) In the third column enter the marginal utility (MU) associated with each value of X –the change in utility in going from one value of X to the next.

c) Use the 'graph' tool to map the relationship between TU and X.

d) Use the graph tool to map the relationship between MU and X.

Problem 2

Cappuccinos, C, cost $3 each, and music downloads of your favourite artist, M, cost $1 each from your iTunes store. Income is $24.

a) Draw the budget line to scale, with cappuccinos on the vertical axis.

b) If the price of cappuccinos rises to $4, compute the new slope.

c) At the initial set of prices, are the following combinations of goods in the affordable set: (4C and 9M), (6C and 2M), (3C and 15M)?

d) Which combination(s) in part (c) lie inside the affordable set, and which lie on the boundary?

Problem 3

The price of cappuccinos is $3, the price of a theatre ticket is $12, and consumer income is $72.

a) In a graph with theatre tickets on the vertical axis and cappuccinos on the horizontal axis, draw the budget constraint to scale, marking the intercepts.

b) Suppose the consumer chooses the combination of 4 theatre tickets and 8 cappuccinos. Draw such a point on the budget constraint and mark the affordable and non-affordable regions.

c) Is the combination of 3 tickets and 24 cappuccinos affordable?

d) Is the combination in part (c) preferred to, or less preferred than, the chosen point in part (b)?

e) If the price of cappuccinos falls to $2 per cup, is the combination of 24 cappuccinos and 3 tickets affordable? Is the combination of 18 cappuccinos and 3 tickets affordable?

Problem 4

A student’s income is $50. Lunch at the cafeteria costs $5, and movies at the Student Union cost $2 each.

a) Draw the budget line to scale, with lunch on the vertical axis; insert some regular shaped smooth convex indifference curves, and choose the tangency equilibrium, denoted by E0.

b) If the price of lunch falls to $2.50, draw the new budget line. What can be said about the new equilibrium relative to E0 if both goods are normal?

c) If the price of movies also falls to $1, draw the new budget line and illustrate a new equilibrium.

d) How does the equilibrium in part (c) differ from the equilibrium in part (b)?

Problem 5

Lionel likes to eat a nice piece of Brie cheese while having a glass of wine. He has a monthly gourmet budget of $120. In a diagram with wine on the vertical axis and cheese on the horizontal axis, suppose that the intercepts are 10 bottles on the wine axis and 4 kilos on the cheese axis. He is observed to purchase 5 bottles of wine and 2 kilos of cheese. Is this possible?

a) What are the prices of wine and cheese?

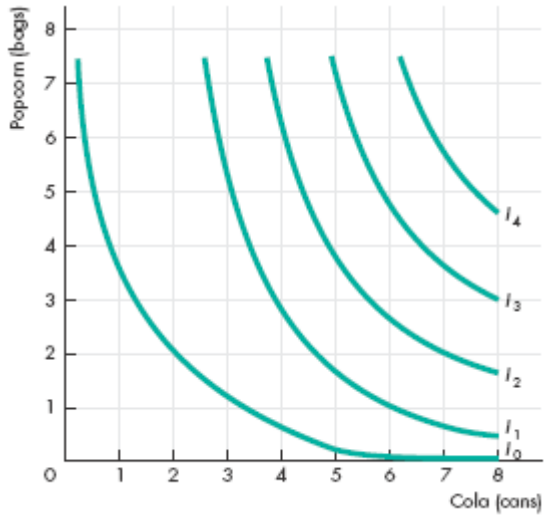
b) Suppose that the price of wine increases to $20 per bottle, but that Lionel's income simultaneously increases by $60. Draw the new budget constraint and mark the intercepts.

c) Is Lionel better off in the new or old situation? [Hint: ask if he can now afford the bundle he purchased with a lower income and lower wine price.]

Problem 6

Use the following information to work Problems 1 to 2.

Sara's income is $12 a week. The price of popcorn is $3 a bag, and the price of cola is $1.50 a can. The figure shows Sara's preference map for popcorn and cola.



1. What quantities of popcorn and cola does Sara buy? What is Sara's marginal rate of substitution at the point at which she consumes?

2. Suppose that the price of cola rises to $3.00 a can and the price of popcorn and Sara's income remain the same. What quantities of cola and popcorn does Sara now buy? What are two points on Sara's demand curve for cola? Draw Sara's demand curve. Is cola a normal good or an inferior good? Explain your opinion.

PART 4. PRODUCTION DECISIONS

Main questions

1. The Ownership and Management of Firms
2. Production
3. Short-Run Production: One Variable and One Fixed Input
4. Short-Run Production: One Variable and One Fixed Input
5. Returns to Scale
6. Productivity and Technical Change

Key Terms

internal benefits	external benefits
net benefits	cost/benefit analysis
revenue	economic profit
marginal benefit	marginal thinking
marginal revenue	convexity
discrete decisions	nonconvexity
static analysis	dynamic analysis
sunk cost	path dependence
switching costs	network externality
perfect capital market	capital constraint

Exercise 1.

For each question, fill in the missing information in the space.

1. Full social efficiency and economic efficiency are achieved when production processes are chosen to maximize _____ benefits.

2. A group of ten people want to start a laundry business together, but due to racial discrimination they cannot obtain adequate financing. These people face a _____ constraint.

3. The benefit that accrues from producing the last unit of output is the _____ benefit.

4. Bob's Barber Shop produces one good: haircuts. Suppose there are no externalities associated with production of haircuts. Bob can maximize net benefits by producing a number of haircuts such that marginal benefit is equal to _____.

5. Cans of sardines sell at a constant rate of $2.09 each. Thus, we can say that the _____ to a sardine seller is constant at $2.09.

6. In a perfectly competitive market with no externalities, profits are maximized when _____ is set equal to price.

7. The profit curve for production of travel guides to Denmark has only one peak. Therefore this profit curve can be described as _____.

8. Discrete decision making is necessary when an economic problem is characterized by _____.

Exercise 2.

For each question, mark the letter next to the correct answer.

1. Economic profit is a narrower concept than net benefits because

a) it includes only accounting profit;

b) it includes only opportunity costs;

c) it does not include benefits or costs that are external to the firm;

d) it does not include marginal benefits or costs;

e) it does not take long-term average costs into account.

2. Assuming that a problem is «convex» net benefits are maximized when

a) producers select a level of production where internal benefits equal external costs;

b) producers select a level of production at which costs equal benefits;

c) producers engage in an activity up to the point where marginal benefit exceeds marginal cost;

d) producers engage in an activity up to the point where marginal benefit equals marginal cost;

e) producers engage in an activity up to the point where total average revenue exceeds total average cost.

Questions 3, 4, and 5 refer to the following scenario.

Handy Hardware Factory produces desk lamps, according to the following cost structure. They are a price taker, and can sell any number of lamps for $8 each.

Quantity of Lamps	Marginal Cost ($)	Total Cost ($)	Marginal Revenue (= Price) ($)	Total Revenue ($)	Total Profit ($)
0	--	50	--		
1	15		8		
2	5		8		
3	6		8		
4	8		8		
5	12		8		

3. What is the total cost of producing 3 lamps?

a) $ 6;
b) $ 8;
c) $ 50;
d) $ 76;
e) none of the above.

4. What level of total profit will Handy Hardware make, if it produces 3 lamps?

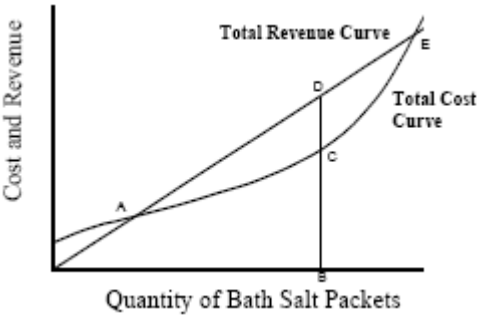
a) less than $ 0 (that is, a loss);
b) between $ 0 and $20;
c) between $20 and $50;
d) more than $50;
e) Cannot be determined from the information given.

5. What is the profit-maximizing level of output for Handy Hardware?

a) 0 lamps;
b) 1 lamp;
c) 3 lamps;
d) 4 lamps;
e) none of the above.

Questions №6, №7 and №8 refer to the following scenario.

Bertha's Bath Supplies produces packets of bath salts, which are sold for $5 each. Bertha's Bath Supplies is a price-taking firm. Total revenue and total cost curves for the firm are shown in the graph below.



6. Which of the following statements is true regarding the graph shown above?

a) profits are maximized at point E;
b) the distance from B to C represents profit earned;
c) the distance from B to D represents profit earned;
d) the distance from C to D represents profit earned;
e) at point B, marginal revenue is designated by point D.

7. How would you determine whether point B is the profit-maximizing level of production for Bertha's Bath Supplies?

a) compare the slopes of the cost and revenue curves at points C and D;
b) compare the distance from A to C with the distance from A to B;

c) compare the slope of the cost curve at point C with the slope of the marginal cost curve;

d) compare the distance from B to C with the distance from B to D;

e) none of the above.

8. Which of the following statements about Bertha's Bath Supplies do you know to be true, based on the information provided above?

a) profits are maximized when production reaches 100 packets;

b) profits are maximized at point E;

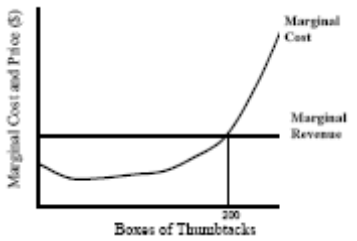
c) profits are maximized when marginal costs equal $5 per packet;

d) point B represents a production level yielding zero profit;

e) point E represents a production level yielding positive profit.

Questions №9 and №10 refer to the scenario below.

Tillie's Tack Place manufactures thumb tacks and sells them for $2.00 per box of tacks. The graph below shows marginal cost and marginal revenue for Tillie's Tack Place.



9. When Tillie's Tack Place is producing 200 boxes of thumbtacks, which of the following statements must be true?

a) Tillie's Tack Place is not yet making a profit;

b) Producing more tacks would reduce total profits;

c) Producing more tacks would increase total profits;

d) Total costs exceed total revenues at this point.

e) Producing one more box of tacks would mean that total costs would exceed total revenues.

10. When Tillie's Tack Place is producing 200 boxes of thumbtacks, the marginal cost per box is equal to

a) $50;

b) $25;

c) $5;

d) $2;

e) The marginal cost cannot be determined from the information given here.

11. Which of the following is an example of an external benefit?

a) Joan enjoys cooking, so she makes herself a three course dinner every night;

b) Marcia volunteers at a local shelter for the homeless;

c) James makes a profit selling apples from his orchard;

d) Susan gives a present to her boss so that her boss will be nicer to her;

e) Sam plants a rose bush outside his home and his neighbors enjoy the sweet smell.

12. George has watched half a movie. He is not enjoying the movie very much, and it occurs to him he could be spending this time visiting with a friend who is only in town for the weekend. George considers staying for the end of the movie since he paid $8 for the movie ticket, but in the end he decides not to waste any more time watching the movie, and to go see his friend instead. George's decision is an example of:

a) marginal thinking;

b) full cost accounting;

c) increasing returns to scale;

d) decreasing returns to scale;

e) lumpiness.

13. The price of lemon candy rises from $1 per bag to $1.20 per bag. In response to this price change, candy manufacturers increase production of lemon candy. Assuming candy manufacturers are price-taking, profit maximizing firms, we can conclude that:

a) candy makers have increased production to the point where average costs equal $1.20;

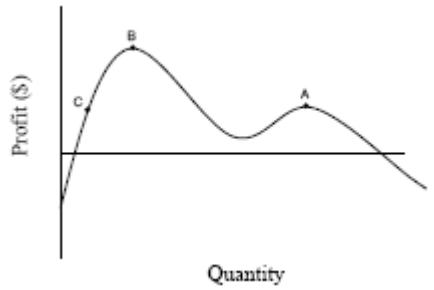
b) candy makers have increased production to the point where marginal costs equal $1.20;

c) candy makers have colluded to raise prices together;

d) candy makers were making losses before the price change;

e) candy makers were not maximizing profits at the lower price.

For Question №14 refer to the following graph:



14. Which of the following statements is true about the graph shown above?

a) profit maximization for this firm requires only marginal decision making;

b) marginal decision making will move the form gradually from Point A to Point B;

c) starting from Point C, marginal decision making is sufficient to maximize profits;

d) starting from Point C, discrete decision making is necessary for profit maximization;

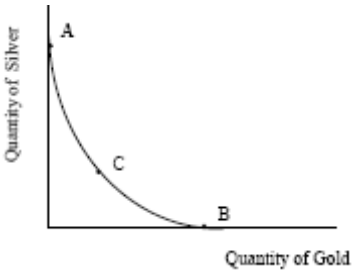
e) the profit function for this firm is convex.

15. A ship builder can build two, three, or four ships, but can't build two and a half ships, even if the profits would theoretically be maximized at that level of production. This inconvenient fact is known as:

a) path dependence;
b) sunk cost;
c) static analysis;
d) lumpiness;
e) convexity.

Questions №16 and №17 refer to the following scenario:

A community has the option to mine for silver, to mine for gold, or to do both. The community's PPF is shown in the graph below.



16. Which of the following outcomes would be preferable for the community?

a) specialize in gold mining;
b) specialize in silver mining;
c) mine some of each;
d) specializing in either gold or silver mining is preferable to doing some of each;
e) Can't tell from the information provided.

17. Which of the following statements about this graph is false?

a) it has a corner solution;
b) both silver and gold mining have increasing returns;
c) silver and gold mining require similar resource inputs;
d) point C represents the optimal level of gold and silver production;
e) production efficiency increases with increasing levels of specialization.

For Question 18 and Question 19 refer to the following scenario:

Fuzzy Wuzzy Caterpillar Farm has a profit function with two equilibria. At one equilibrium point, the farm produces 50,000 caterpillars per season and enjoys total profits of $10,000. At the other equilibrium point, the farm produces only 25,000 caterpillars and makes a profit of $20,000. The farm started out producing 45,000 caterpillars because that sounded like a good number to the manager, and through marginal decision making has reached the equilibrium point of 50,000 caterpillars.

18. The situation described above is characterized by:

a) path dependence;
b) convexity;
c) corner solution;
d) sunk costs;
e) both a and b are correct.

19. The farm conducts an analysis that indicates producing only 25,000 caterpillars would be better than what it is doing right now. But moving to a level of only 25,000 caterpillars requires a variety of adjustments, including laying off several workers and buying smaller caterpillar boxes for shipping smaller caterpillar orders to customers. These costs are known as:

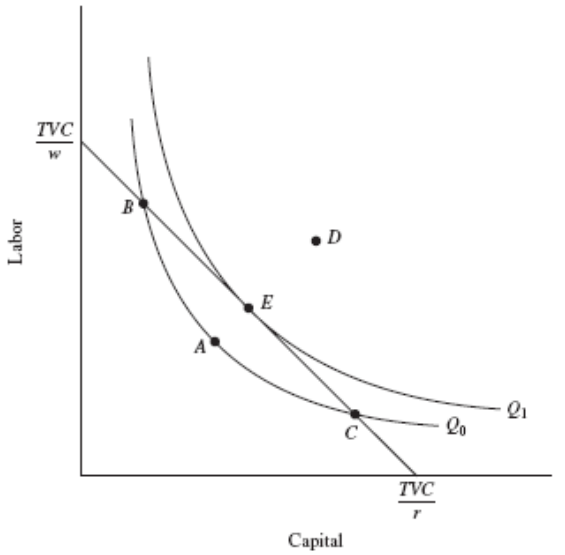
a) corner costs;
b) network externalities;
c) switching costs;
d) negative costs;
e) internal costs.

20. You like to write papers on your manual typewriter. But when your typewriter runs out of ribbon, you have trouble buying a replacement ribbon. At your local office supplies store, the cashier explains they have stopped carrying typewriter ribbon because most people use computers now. Eventually you switch to using a computer for writing your papers because getting replacement ribbon for your typewriter is too complicated. You have experienced an example of:

a) a concave production curve;
b) a sunk cost;
c) a switching cost externality;
d) a path externality;
e) a network externality.

Exercise 3.

A. Look at the figure of firm's equilibrium.



B. For each question, mark the letter next to the correct answer.

1. Which point is both technologically and allocatively efficient?

a) A;
b) B;
c) C;
d) D;
e) E.

2. Which points are allocatively ineffi cient?

a) *B* and *E;*
b) *A* and *E;*
c) *B* and *C;*
d) *D* and *E;*
e) *C* and *D.*

3. What must happen to make Point *D* feasible?

a) a decrease in the price of labor;
b) a decrease in the price of capital;
c) an increase in the amount of money the fi rm is willing to spend;
d) an improvement in the fi rm's technology;
e) all of the above.

PART 5. PRODUCTION COSTS

Main questions

1. Economic Costs.
2. Short-Run Technology Constraints.
3. Short-Run Production Costs.
4. The Long-Run Cost Curve.

Key Terms

inputs	outputs
waste products	intermediate goods
final goods	accounting costs
economic costs	internal costs
external costs	technical efficiency
social costs of production	false economies
production function	fixed input
variable input	short run
capacity constraint	limiting factor
long run	positive (direct) relationship
ceteris paribus	negative (inverse) relationship
marginal return	diminishing (marginal) returns
total product curve	constant (marginal) returns
increasing (marginal) returns	fixed cost
variable cost	total cost
marginal cost	increasing (marginal) costs
total cost curve	constant (marginal) costs
decreasing (marginal) costs	average (total) cost
long run average cost	economies of scale
constant returns to scale	diseconomies of scale
minimum efficient scale	maximum efficient scale
input substitution	

Exercise 1.

For each question, mark the letter next to the correct answer.

1. Total cost is the sum of fixed costs and :

a) accounting costs;
b) explicit costs;
c) implicit costs;
d) variable costs.

2. A firm has fixed costs:

a) in the short run and in the long run;

b) in the short run but not in the long run;
c) in the long run but not in the short run;
d) neither in the long run nor in the short run.

3. Total fixed cost is the sum of all:

a) costs of the firm's fixed inputs;
b) costs associated with the production of goods;
c) costs that rise as output increases;
d) explicit costs.

4**. Total variable cost is the sum of all:**

a) costs of the firm's fixed inputs;
b) costs associated with the production of goods;
c) costs that rise as output increases;
d) implicit costs.

5. A firm's marginal cost is the increase in its total cost divided by the increase in its:

a) quantity of labor;
b) average cost;
c) output;
d) average revenue.

6. Marginal cost is:

a) all the costs of the fixed inputs;
b) all the costs of production of goods;
c) all the costs that vary with output;
d) the change in the total cost resulting from a one unit change in output.

7. Marginal cost is calculated as:

a) total cost divided by output;
b) the increase in total cost divided by the increase in output;
c) the increase in total cost divided by the increase in labor, given the amount of capital;
d) total cost minus total fixed cost.

8. A company could produce 99 units of a good for $316 or produce 100 units of the same good for $320. The marginal cost of the 100th unit:

a) is $3.20;
b) is $4.00;
c) is $320;
d) cannot be calculated with this information.

9. A company could produce 100 units of a good for $320 or produce 101 units of the same good for $324. The $4 difference in costs is:

a) the marginal benefit of producing the 101st unit;
b) the marginal cost of producing the 101st unit;
c) both the marginal benefit and the marginal cost of producing the 101st unit;

d) neither the marginal benefit nor the marginal cost of producing the 101st unit.

10. By using more labor to produce more output, a firm can always reduce its:

a) average cost of labor;
b) marginal fixed cost of labor;
c) marginal fixed cost of output;
d) average fixed cost.

11. Average total costs are total costs divided by:

a) total output.
b) total fixed costs.
c) total variable costs.
d) the total number of workers employed.

12. Average total costs are:

a) total costs divided by total output;
b) total output divided by total costs;
c) the change in total costs divided by the change in output;
d) the change in output divided by the change in total costs.

Table 1

Cost schedule			
Labor (workers)	Output (units per day)	Total fixed cost (dollars)	Total variable (dollars)
0	0	20	0
1	4	20	25
2	9	20	50
3	13	20	75
4	16	20	100
5	18	20	125

13. In the above table 1, the total cost of producing 9 units of output is:

a) $20;
b) $30;
c) $50;
d) $70.

14. The above table 1 shows a firm's:

a) long-run costs;
b) short-run costs;
c) short-run and long-run costs;
d) more information is needed to determine if the costs are long-run costs or short-run costs.

15. In the above table 1, the total variable cost of producing 16 units of output is:

a) $20;
b) $60;
c) $100;
d) $120.

16. Using the data in the above table 1, when output increases from 4 to 9 units, the marginal cost of *one* of those 5 units is:

a) $4.00;
b) $4.25;
c) $5.00;
d) $6.25.

17. Using the data in the above table 1, the average fixed cost of producing 9 units per day is:

a) $2.22;
b) $5.00;
c) $5.55;
d) $20.00.

18. Using the data in the above table 1, the average total cost of producing 16 units per day is

a) $1.25;
b) $6.25;
c) $7.00;
d) $7.50.

Table 2

Output (pies)	Total variable cost (dollars)	Total cost (dollars)
0	0	300
100	400	
200	1000	
300	1800	
400	2800	

19. The above table 2 gives some of the costs of the Delicious Pie Company. What is the total fixed cost of producing 100 pies?

a) $300;
b) $400;
c) $700;
d) more information is needed to calculate the total fixed cost.

20. The above table 2 gives some of the costs of the Delicious Pie Company. The marginal cost of increasing pie output from 200 to 300 pies equals ____ per pie.

a) $1.800;
b) $1,000;
c) $8;
d) $6.

21. The above table 2 gives some of the costs of the Delicious Pie Company. What is the average variable cost of producing 300 pies?

a) $1,800;
b) $6;
c) $5;
d) more information is needed to calculate the average variable cost.

22. The above table 2 gives some of the costs of the Delicious Pie Company. What is the average total cost of producing 200 pies?

a) $1300;
b) $650;
c) $6.50;
d) $5.00.

Table 3

Output (units)	Total cost (dollars)	Average variable cost (dollars)	Marginal cost (dollars)
0	10		
3			80
9		20	
14	290		
17	380		

23. The above (incomplete) table 3 provides information about the relationships between output and various cost measures. The total fixed cost (*TFC*) for the firm is:

a) zero;
b) $45;
c) $10;
d) none of the above answers is correct

24. The above (incomplete) table 3 provides information about the relationships between output and various cost measures. The total cost (*TC*) of producing 9 units of output is:

a) $180;
b) $190;
c) $20;
d) none of the above answers is correct.

25. The above (incomplete) table 3 provides information about the relationships between output and various cost measures. The marginal cost per unit when increasing output from 14 to 17 units is:

a) $20;
b) $30;
c) $380;
d) none of the above answers is correct.

26. The vertical distance between a firm's total cost (*TC*) and its total variable cost (*TVC*) curves:

a) decreases as output decreases;
b) is equal to the average variable cost, *AVC*;
c) is equal to the total fixed cost, *TFC*;
d) is equal to the marginal cost, *MC*.

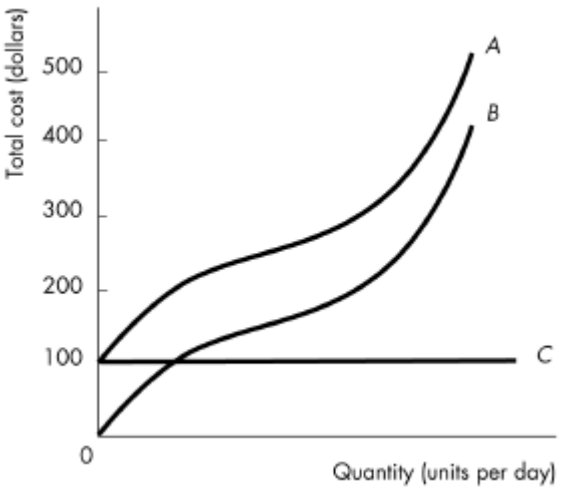


Figure 1

27. In the above figure 1, the total fixed cost curve is curve:

a) *A;*
b) *B;*
c) *C;*
d) none of the curves in the figure.

28. In the above figure 1, the total variable cost curve is curve:

a) *A;*
b) *B;*
c) *C;*
d) none of the curves in the figure.

29. In the above figure 1, the total cost curve is curve:

a) *A*;
b) *B;*
c) *C;*
d) none of the curves in the figure.

30. In the above figure 1, the relationship between costs indicates that the distance between curves:

a) *A* and *B* is equal to the fixed cost;
b) *A* and *B* is equal to the variable cost;
c) *B* and *C* is equal to the fixed cost;
d) *B* and *C* is equal to the average total cost.

31. As output increases, the slope of the curve showing the firm's average fixed cost is:

a) first negative then positive;
b) first positive then negative;
c) always negative;
d) always positive.

32. The vertical distance between a firm's average total cost curve, *ATC*, and its average variable cost curve, *AVC*:

a) decreases as output increases;
b) is equal to its marginal cost, *MC*;
c) is equal to its total fixed cost, *TFC*;
d) is equal to its average product.

33. The marginal cost (*MC*) curve intersects the:

a) *ATC*, *AVC*, and *AFC* curves at their minimum points;
b) *ATC* and *AFC* curves at their minimum points;
c) *AVC* and *AFC* curves at their minimum points;
d) *ATC* and *AVC* curves at their minimum points.

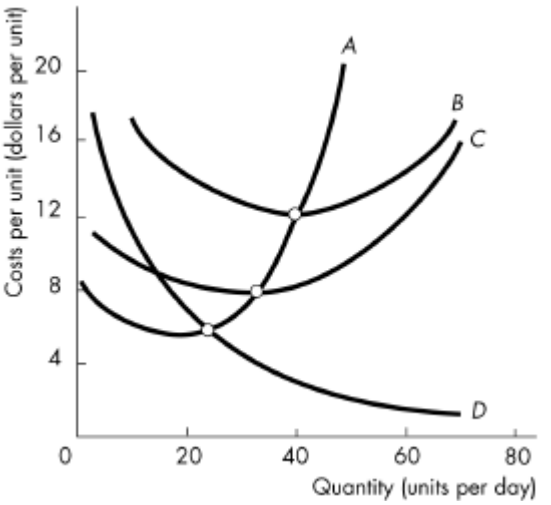


Figure 2

34. In the above figure 2, the marginal cost curve is curve:

a) *A;* c) *C;*
b) *B;* d) *D.*

35. In the above figure 2, the average fixed cost curve is curve:

a) *A;* c) *C;*
b) *B;* d) *D.*

36. In the above figure 2, the average variable cost curve is curve:

a) *A;* c) *C;*
b) *B;* d) *D.*

37. In the above figure 2, the average total cost curve is curve:

a) *A;* c) *C;*
b) *B;* d) *D.*

38. In the above figure 2, as output increases, the distance between curves *B* and *C* decreases because:

a) total cost decreases as output increases;
b) average fixed cost decreases as output increases;
c) there are diminishing returns to average total cost;
d) there are increasing marginal costs as output increases.

39. In the above figure 2, curve *D* slopes downward because:

a) average fixed costs decrease as output increases;
b) all costs decrease as output increases;
c) there are diminishing returns;

d) there are decreasing marginal costs.

40. In the above figure 2, the intersection of curves *A* and *C* is the point at which:

a) average total cost is minimized;

b) average variable cost is minimized;

c) average fixed cost is minimized;

d) total product is maximized.

41. In the above figure 2, the intersection of curves *A* and *B* is the point at which:

a) average total cost is minimized;

b) average variable cost is minimized;

c) average fixed cost is minimized;

d) total product is maximized.

e)

Exercise 2. ***Solve problems.***

Problem 1

Consider the following cost information for a pizzeria:

Output	***TFC*** Total fixed cost	***TVC*** Total variable cost	***TC*** Total cost	***AFC*** Average fixed cost	***AVC*** Average variable cost	***ATC*** Average total cost	***MC*** Marginal cost
0		0	60				
1		45					
2		85					
3		120					
4		150					
5		185					
6		225					
7		270					
8		325					
9		390					
10		465					

a) Construct a table in which you calculate the total fixed costs, total cost, average fixed cost, average variable cost, average total cost and marginal cost.

b) Graph all three curves (total fixed costs, total variable cost, total cost). What is the relationship between these sets of numbers? Comment.

c) Graph all three curves (average fixed cost, average variable cost, average total cost, marginal cost). What is the relationship between these sets of numbers? Comment.

Problem 2

Answer the question on the basis of the following cost data:

Output	Total cost
0	$ 24
1	33
2	41
3	48
4	54
5	61
6	69

Refer to the above data.

The total variable cost of producing 5 units is $____ .

The average total cost of producing 3 units of output is $____ .

The marginal cost of producing the sixth unit of output is $____ .

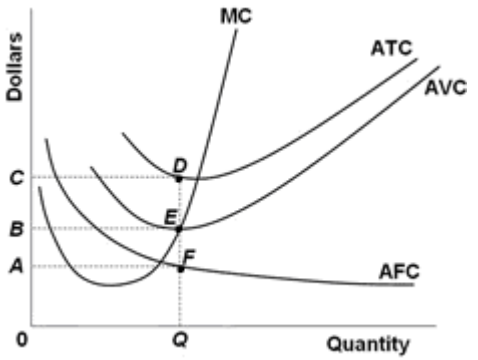
Problem 3

Bill's Bakery has a fire and Bill loses some of his cost data. The bits of paper that he recovers after the fire provide the information in the following table (all the cost numbers are dollars).

Output	*TFC* Total fixed cost	*TVC* Total variable cost	*TC* Total cost	*AFC* Average fixed cost	*AVC* Average variable cost	*ATC* Average total cost	*MC* Marginal cost
0			120				
10						40	
20							
30			548				6

Bill asks you to come to his rescue and provide the missing data in the empty cells.

Problem 4



1. Refer to the above diagram. At output level Q average fixed cost:

a) is equal to *EF*;
b) is equal to *QE*;
c) is measured by both 0*A* and *BC*;
d) cannot be determined from the information given.

2. Refer to the above diagram. At output level Q total cost is:

a) 0*BEQ;*
b) *BCDE;*
c) 0*AFQ* plus *BCDE;*
d) 0*BEQ* plus *BCDE.*

3. Refer to the above diagram. At output level Q total fixed cost is:

a) 0*BEQ;*
b) *BCDE;*
c) 0*BEQ*-0*AFQ;*
d) 0*CDQ.*

4. Refer to the above diagram. At output level Q total variable cost is:

a) 0*BEQ;*
b) *BCDE;*
c) 0*CDQ;*
d) 0*AFQ.*

PART 6. PERFECT COMPETITION

Main questions

1. What is Perfect Competition?
2. Profit-Maximizing Output.
3. Long-Run Equilibrium: a Competitive Firm and Market.

Key Terms

competitive market	price takers
average revenue	profit maximization
marginal revenue	sunk cost
short run	market supply
long run	marginal firm

the competitive firm's shortrun supply curve

the competitive firm's longrun supply curve

Exercise 1.

Look at the figure and for each question, mark the letter next to the correct answer.

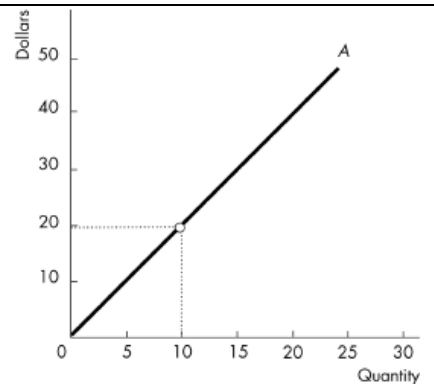


Figure 1

1. The figure 1 shows a firm's total revenue line. The firm must be in a market with:

a) perfect competition;
b) monopolistic competition;
c) monopoly;
d) oligopoly.

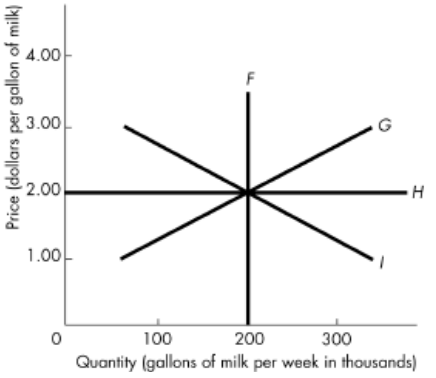


Figure 2

2. In the figure 2, if the milk industry is perfectly competitive, then the firm's marginal revenue curve is represented by:

a) curve *F;*
b) curve *G;*
c) curve *H;*
d) curve *I.*

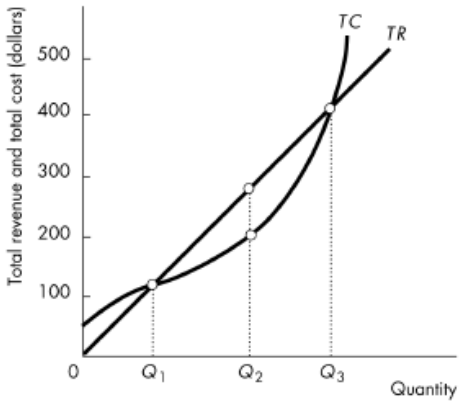


Figure 3

3. In the figure 3, by increasing its output from Q_1 to Q_2, the firm:

a) reduces its marginal revenue;

b) increases its marginal revenue;

c) decreases its profit;

d) increases its profit.

4. In the figure 3, by increasing its output from Q_2 to Q_3, the firm:

a) reduces its marginal revenue;

b) increases its marginal revenue;

c) decreases its profit;

d) increases its profit.

5. The figure 3 illustrates a firm's total revenue and total cost curves. Which one of the following statements is FALSE?

a) Economic profit is the vertical distance between the total revenue curve and the total cost curve;

b) At output *Q* 1 the firm makes zero economic profit;

c) At an output above *Q* 3 the firm incurs an economic loss;

d) At output *Q* 2 the firm incurs an economic loss.

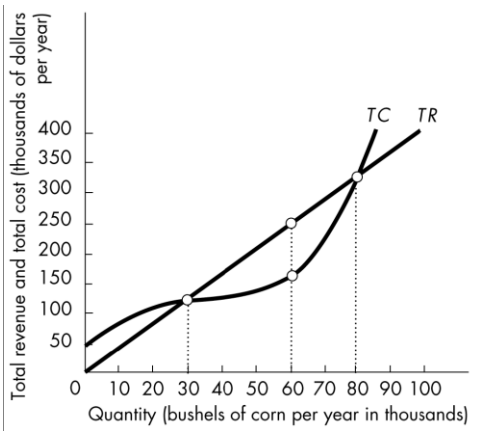


Figure 4

6. Given the total cost and total revenue curves in the figure 4, what are the output levels at which the perfect competitor will earn economic profits?

a) from 0 to 30,000 bushels;

b) from 0 to 60,000 bushels;

c) between 30,000 and 80,000 bushels;

d) over 80,000 bushels.

7. Given the total cost and total revenue curves in the figure 4, what are the output levels at which the perfect competitor will incur economic losses?

a) below 80,000 bushels;

b) from 30,000 to 80,000 bushels;

c) below 30,000 bushels and over 80,000 bushels;

d) at 30,000 bushels and at 80,000 bushels.

8. Given the total cost and total revenue curves in the figure 4, what is the profit-maximizing output level?

a) 30,000 bushels;

b) 60,000 bushels;

c) 80,000 bushels;

d) all output levels occur between 30,000 and 80,000 bushels are profit-maximizing output levels.

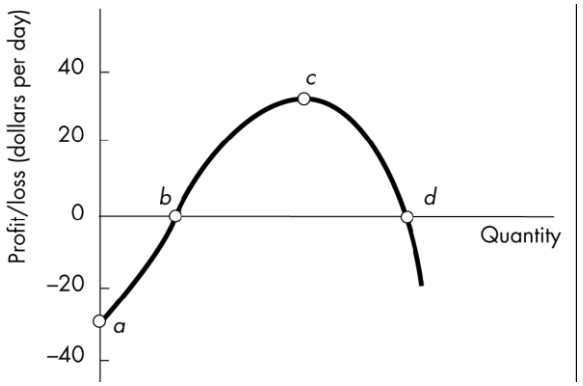


Figure 5

9. In the figure 5, the firm is making an economic loss at:

a) point *a;*
b) point *c;*
c) points *b* and *d;*
d) points *a*, *b*, and *d*.

10. In the figure 5, the firm is breaking even at points:

a) *a* and *c;*
b) *b* and *d;*
c) *c* and *d;*
d) *a* and *d.*

11. In the figure 5, when the firm produces output corresponding to point *c*, the firm's marginal cost:

a) is less than its marginal revenue;
b) equals its marginal revenue;
c) exceeds its marginal revenue;
d) equals its average revenue.

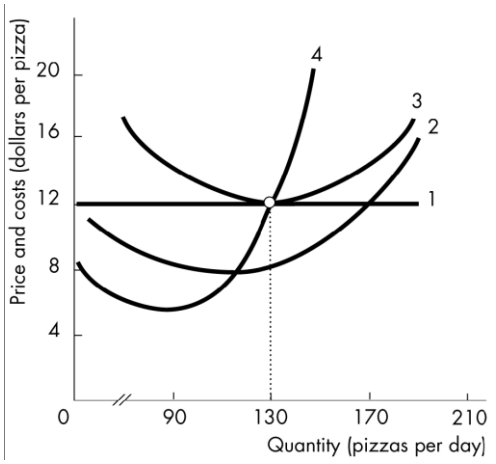


Figure 6

12. In the figure 6, the line represented by the «1» is the:

a) average fixed cost;
b) marginal revenue;
c) total cost;
d) average total cost.

13. In the figure 6, the line represented by the «2» is the:

a) average fixed cost;
b) total cost;
c) average variable cost;
d) average total cost.

14. In the figure 6, the line represented by the «3» is the:

a) average total cost;
b) average variable cost;
c) marginal cost;
d) average fixed cost.

15. In the figure 6, the line represented by the «4» is the:

a) average fixed cost;
b) marginal revenue;
c) average total cost;
d) marginal cost.

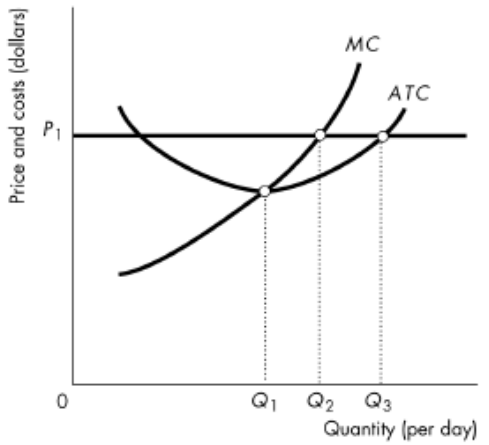


Figure 7

16. In the figure 7, if the price is P_1, the firm will produce:

a) nothing;
b) where *MC* equals *ATC;*
c) where *MC* equals P_1;
d) where *ATC* equals P_1.

17. In the figure 7, if the price is P_1, the firm maximizes its profit by producing:

a) nothing;
b) where *MC* equals *ATC;*
c) where *MC* equals P_1;
d) where *ATC* equals P_1.

18. In the figure 7, if the firm increases its output from Q_1 to Q_2, it will:

a) reduce its marginal revenue;

b) increase its marginal revenue;
c) decrease its profit;
d) increase its profit.

19. In the figure 7, if the firm increases its output from Q_2 to Q_3, it will

a) reduce its marginal revenue;
b) ncrease its marginal revenue;
c) decrease its profit;
d) increase its profit.

20. In the figure 7, if the price is P_1, the firm is

a) making an economic profit;
b) incurring an economic loss;
c) breaking even;
d) shut down.

21. In the figure 7, if the firm produced Q_1, the firm's economic profit is ____ than if it produced Q_2 and ____ than if it produced Q_3.

a) less; less;
b) less; more;
c) more; less;
d) more; more.

22. In the figure 7, if the firm produced Q_3, the firm's economic profit is ____ than if it produced Q_1 and ____ than if it produced Q_2.

a) less; less;
b) less; more;
c) more; less;
d) more; more.

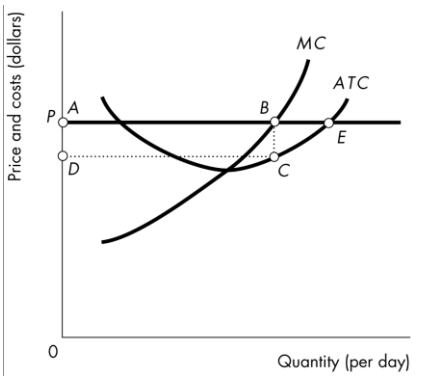


Figure 8

23. Consider the perfectly competitive firm in the figure 8. At the profit maximizing level of output, the firm will

a) earn an economic profit equal to the area *ABCD;*

b) incur an economic loss equal to the area *ABCD;*

c) earn a normal profit;

d) earn an economic profit equal to the area *AECD*.

24. Consider the perfectly competitive firm in the figure 9. The profit maximizing level of output for the firm is equal to:

a) 0 units;

b) 4 units;

c) 17 units;

d) 19 units.

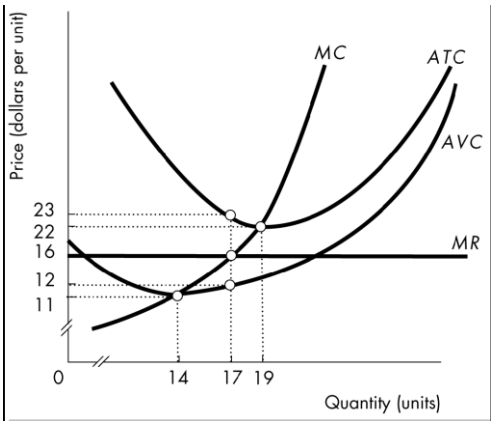


Figure 9

25. Consider the perfectly competitive firm in the figure 9. At the profit maximizing level of output, the firm is earning:

a) an economic loss equal to $119;

b) an economic loss equal to $114;

c) an economic loss equal to $102;

d) a normal profit.

26. Consider the perfectly competitive firm in the figure 9. The shutdown point occurs at a price of:

a) $11;

b) $12;

c) $16;

d) $22.

27. The figure 10 shows a firm in a perfectly competitive market. The firm will shut down if price falls below:

a) $P_{1;}$

b) $P_{2;}$

c) $P_{3;}$

d) P_4.

28. The figure 10 shows a firm in a perfectly competitive market. If the firm does not shut down, the least amount of output that it will produce is:

a) less than 5 units;

b) 5 units;

c) 8 units;

d) 10 units.

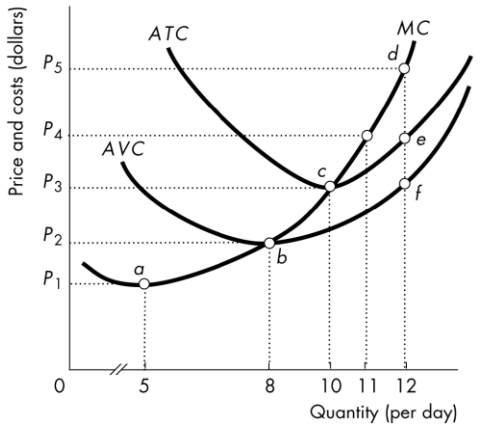


Figure 10

29. The figure 10 shows a firm in a perfectly competitive market. If the price rises from P_3 to P_4 then output will increase by:

a) 0 units;

b) 1 unit;

c) 2 units;

d) 3 units.

30. The figure 10 shows a firm in a perfectly competitive market. The firm's supply curve is the curved line linking:

a) point *a* to point *c* and stopping at point *c;*

b) point *b* to point *d* and continuing on past point *d* along the *MC* curve;

c) point *b* to point *f* and stopping at point *f;*

d) point *c* to point *e* and continuing on past point *e* along the *ATC* curve.

Exercise 2. ***Solve problems.***

Problem 1

Consider total cost and total revenue given in the table below:

Quantity	0	1	2	3	4	5	6	7	8	9	10
Total cost	60	105	145	180	210	245	285	330	385	450	525
Total revenue	0	50	100	150	200	250	300	350	400	450	500

a) Calculate profit for each quantity. How much should the firm produce to maximize profit? Graph total-revenue–total-cost approach to profit maximization for a purely competitive firm.

b) Calculate marginal revenue and marginal cost for each quantity. Graph Marginal-Revenue–Marginal-Cost approach to profit maximization for a purely competitive firm. At what quantity do these curves cross? How does this relate to your answer to part (a)?

Problem 2

Consider total cost and total revenue given in the table below:

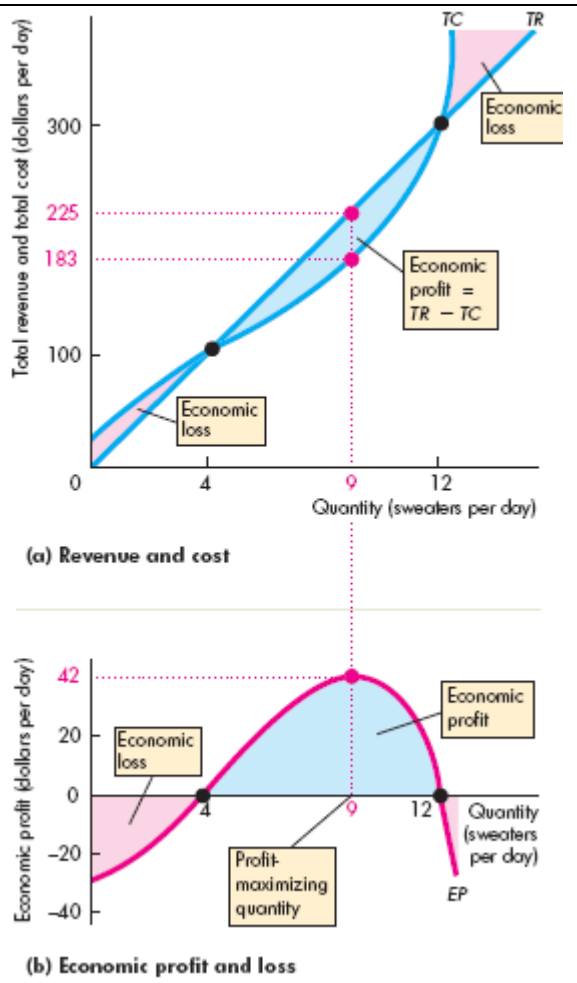
Quantity	0	1	2	3	4	5	6	7	8	9	10
Variable costs	0	50	90	125	158	195	235	280	335	400	475
Fixed cost	65	65	65	65	65	65	65	65	65	65	65
Total revenue	0	45	90	135	180	225	270	315	360	405	450

a) Calculate profit for each quantity. How much should the firm produce to minimize loss? Graph total-revenue–total-cost approach to loss minimization for a purely competitive firm.

b) Calculate marginal revenue and marginal cost for each quantity. Graph Marginal-Revenue–Marginal-Cost approach to loss minimization for a purely competitive firm. At what quantity do these curves cross? How does this relate to your answer to part (a)?

Problem 3

For each question, fill in the missing information in the numbered space.



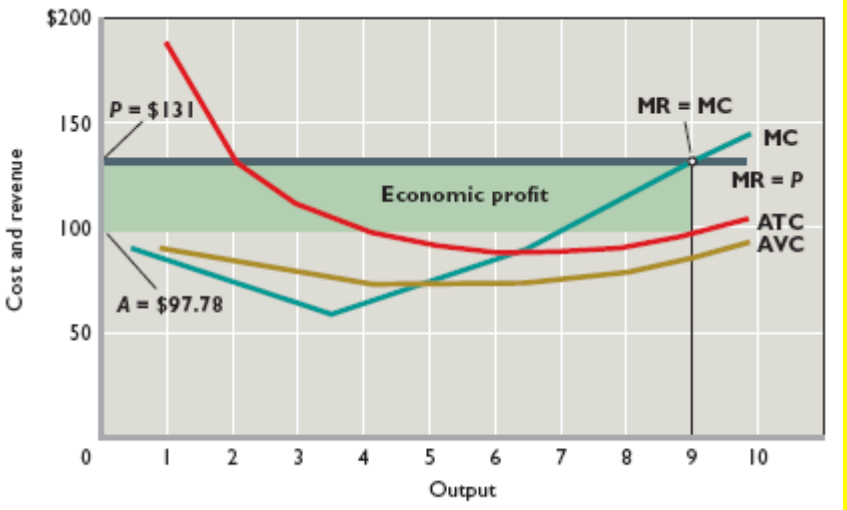
Total-revenue–total-cost approach to profit maximization for a purely competitive firm.

Part (a) graphs the total revenue and total cost curves and part (b) graphs economic profit.

Campus Sweaters makes maximum economic profit (1) ____$ a day, when it produces (2) ____sweaters a day. At outputs of (3) ____sweaters and (4) ____sweaters a day, Campus Sweaters makes (5) ____economic profit—these are break-even points. At outputs less than (6) ____sweaters and greater than (7) ____sweaters a day, Campus Sweaters incurs an economic (8) ____.

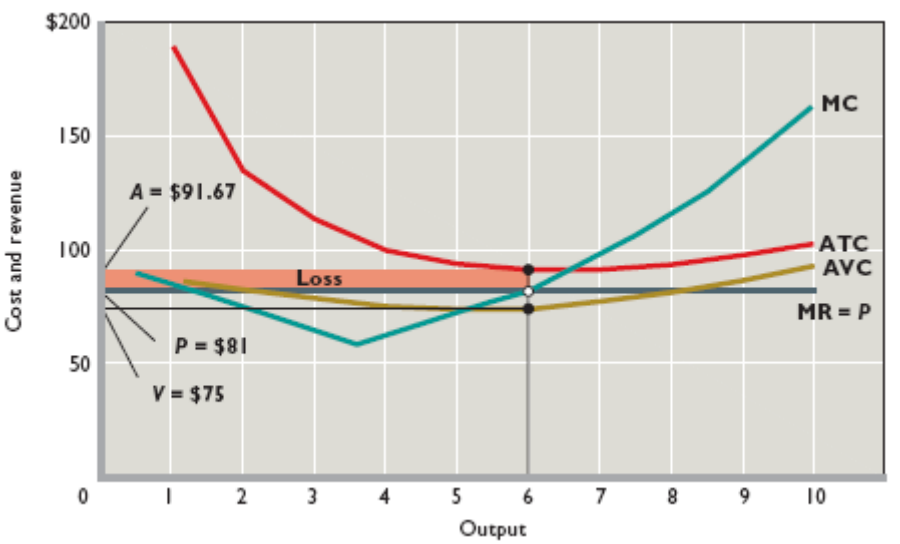
Problem 4

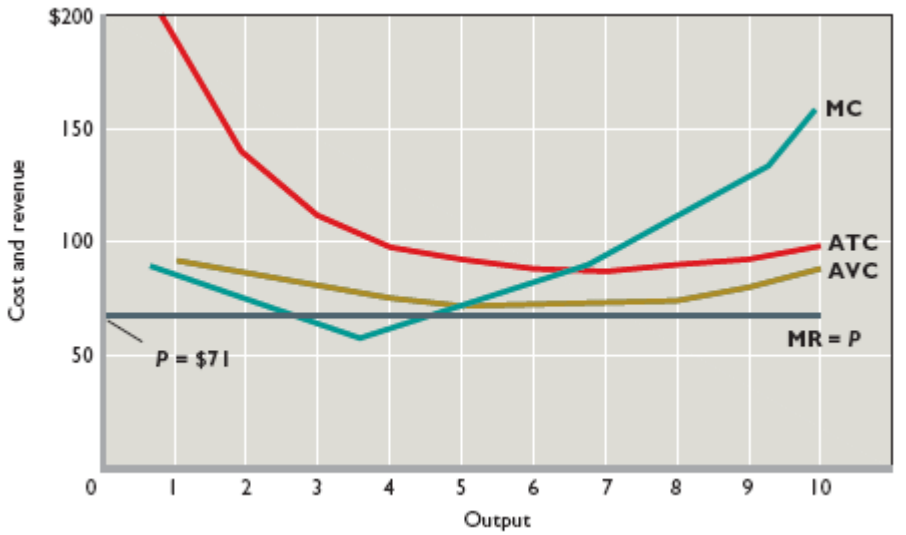
For each question, fill in the missing information in the numbered space.



Short-run (A) _____ maximizing for a purely competitive firm.

The MR=MC output enables the purely competitive firm to maximize profits or to minimize losses. In

	this case MR (= (1) ____ in pure competition) and MC are equal at (2) ____ units of output, *Q*. There *P* (3) _____ the average total cost (*ATC*=(4) ____$), so the firm realizes an economic (5) _____ of (6) ____ $ per unit. The total economic profit is represented by the hatching rectangle and is (7) ____$.
	**Short-run (B) _____ minimization for a purely competitive firm.** If price *P* (8) _____ the minimum AVC but is (9) _____ than ATC, the MR = MC output (here, (10) ____ units) will permit the firm to minimize

	its losses. In this instance the loss is (11) ____$ per unit. The total loss is shown by the hatching area and is equal to (12) ____$.
	**The short-run (C) _____ case for a purely competitive firm.** If price *P* (here, (13) ____$) falls below the minimum (14) ____, the competitive firm will minimize its losses in the short run by shutting down. There is no level of output at which the firm can produce.

PART 7. PURE MONOPOLY

Main questions

1. Introduction to Pure Monopoly.
2. Marginal Revenue and Elasticity.
3. Price and Output Decision.
4. Single-Price Monopoly and Competition Compared.

Key Terms

average cost pricing rule
barrier to entry
capture theory
deregulation
economic rent
legal monopoly
marginal cost pricing rule
monopoly
natural monopoly
perfect price discrimination
price cap regulation
price discrimination
rate of return regulation
regulation
rent seeking
single-price monopoly
social interest theory

Exercise 1.

For each question, mark the letter next to the correct answer.

1. Unregulated monopolies:

a) take the market price as given;
b) cannot incorporate;
c) cannot change the market quantity;
d) can influence the market quantity and price.

2. The following are key features of a monopoly except:

a) the monopoly is protected by a barrier to entry;
b) no close substitutes exist for the good or service;
c) the monopoly has a strong influence over the price of the good or service;
d) the monopoly has severe diseconomies of scale.

3.Which of the following statements about a monopoly is false?

a) monopolies have no barriers to entry or exit;
b) the good produced by a monopoly has no close substitutes;
c) a monopoly is the only producer of the good;
d) none of the above; that is, all of the above answers are true statements about a monopoly.

4. Which of the following is least likely to be a monopoly?

a) the holder of a public franchise;
b) a pharmaceutical company with a patent on a drug;
c) a store in a large shopping mall;
d) the sole owner of an occupational license.

5. A public franchise is:

a) an exclusive right granted to a firm to supply a good or service;
b) a government issued license required to practice a profession;
c) an exclusive right granted to an inventor of a product;
d) a unique source of raw materials.

6. Public franchises create monopolies by restricting

a) demand;
b) prices;
c) entry;
d) profit.

7. Total revenue equals:

a) marginal revenue times quantity sold;
b) price times quantity sold;
c) total cost minus profit;
d) the area between the demand curve and the marginal revenue curve.

8) For a monopoly, the industry demand curve is the firm's:

a) supply curve;
b) marginal revenue curve;
c) demand curve;
d) profit function.

9) Monopolists:

a) maximize revenue, not profits;
b) have no short-run fixed costs;
c) face downward sloping demand curves;
d) are price takers.

10. The marginal revenue curve for a single-price monopoly:

a) lies below its demand curve;
b) coincides with its demand curve;
c) lies above its demand curve;
d) is horizontal.

11. For a single-price monopoly, marginal revenue is ____ when demand is elastic and is ____ when demand is inelastic.

a) negative; negative;
b) negative; positive;
c) positive; negative;
d) positive; positive.

12. To its maximize profit, the monopolist produces on the ____ portion of its demand where ____.

a) elastic; *P = MC;*
b) elastic; *MR = MC;*

c) inelastic; *P = MC;* d) inelastic; *MR = MC.*

13. Monopolies can earn an economic profit in the long run because of:

a) rent seeking by competitors;

b) the elastic demand for the monopoly's product;

c) the cost-savings gained by the monopoly;

d) barriers to enter the monopoly's market.

14. In the long-run, a single-price monopolist will:

a) not be able to continue to earn economic profits and will break even with a normal profit;

b) be able to continue to earn economic profits as long as the market remains a monopoly;

c) end up being regulated by the government because it is making short-run economic profits;

d) both answers A and C are correct.

15. Which of the following is true for BOTH monopoly and perfect competition?

a) the demand for the individual firm's product is perfectly elastic;

b) economic profits can be sustained indefinitely over time;

c) marginal revenue is horizontal at the industry equilibrium price;

d) profits are maximized by producing at the level of output where marginal revenue is equal to marginal cost.

16. Which of the following statements is true?

a) a perfectly competitive industry produces more output and charges a lower price than a single-price monopoly;

b) a perfectly competitive industry produces more output and charges the same price as a single-price monopoly;

c) a perfectly competitive industry produces less output but charges a lower price than a single-price monopoly;

d) a perfectly competitive industry produces less output and charges the same price as a single-price monopoly.

17. Price discrimination:

a) is common in perfectly competitive markets;

b) is more likely for services than for goods that can be stored;

c) is illegal because it always violates antitrust laws;

d) works only if all groups of demanders have the same price elasticity of demand for the product.

18. Price discrimination by a monopoly:

a) increases consumer surplus;
b) decreases consumer surplus;
c) increases the firm's profit;
d) both answers B and C are correct.

19. A monopolist engages in price discrimination because:

a) it is philanthropic;
b) its primary goal is to maximize total revenue;
c) price discrimination will allow it to earn greater economic profit than charging the same price to all customers;
d) it is less expensive than charging the same price to all customers.

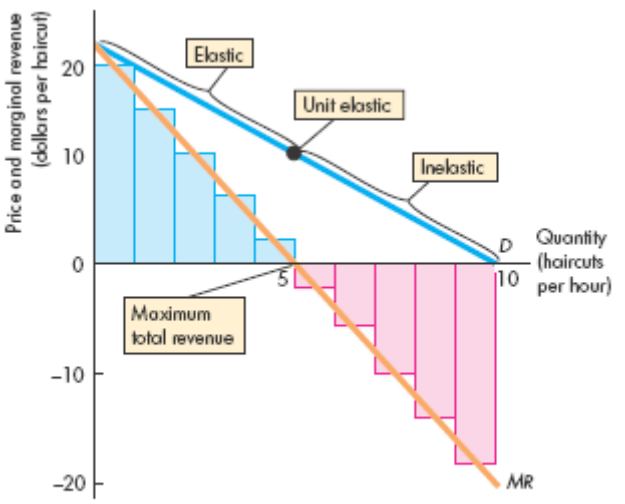
20. When an increase in a firm's output of a good or service brings a decrease in the average total cost of producing it, the firm is experiencing:

a) economies of scope;
b) diseconomies of scale;
c) economies of scale;
d) diminishing returns.

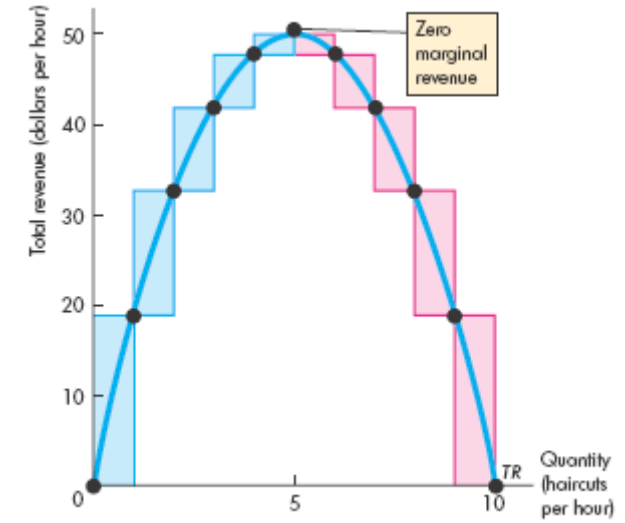
Exercise 2. ***Solve problems.***

Problem 1

For each question, fill in the missing information in the numbered space.



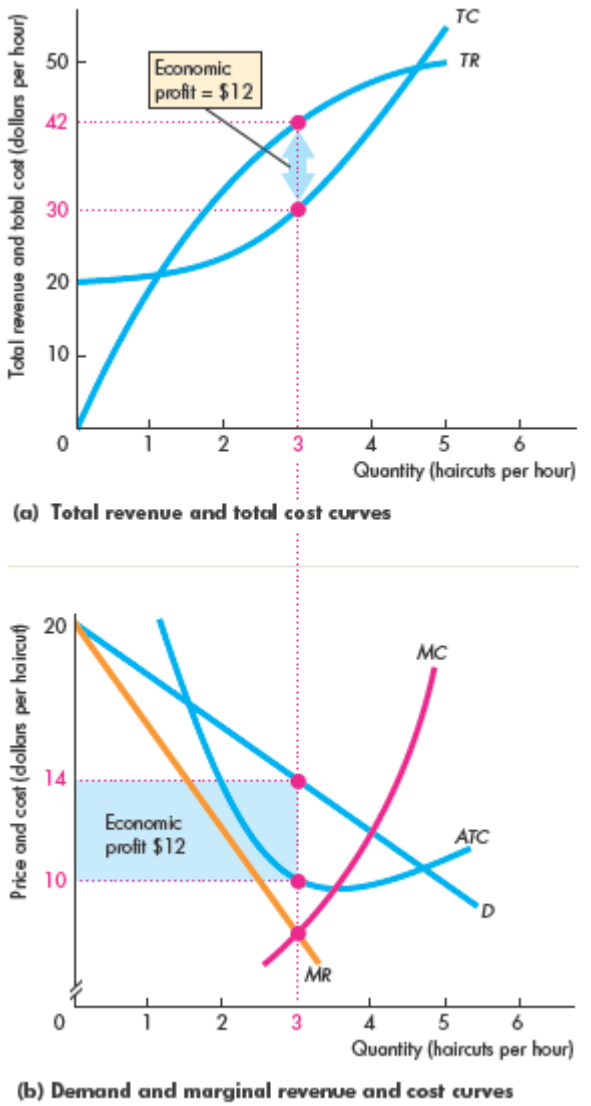
(a) Demand and marginal revenue curves



(b) Total revenue curve

Marginal Revenue and Elasticity

In part (a), the demand curve is (1) ____ and the marginal revenue curve is (2) ____. In part (b), the total revenue curve is (3) ____. Over the range (4) ____ to (5) ____ haircuts an hour, a price cut increases total revenue, so marginal revenue is positive – as shown by the blue bars. Demand is elastic. Over the range (6) ____ to (7) ____ haircuts an hour, a price cut decreases total revenue, so marginal revenue is negative – as shown by the red bars. Demand is inelastic. At (8) ____ haircuts an hour, total revenue is (9) ____ and marginal revenue is (10) ____. Demand is unit elastic.



A Monopoly's Output and Price

In part (a), economic profit is the vertical distance equal to total revenue (*TR*) minus total cost (*TC*) and it is maximized at (1) ____ haircuts an hour.

In part (b), economic profit is maximized when marginal cost (*MC*) (2) ____ marginal revenue (*MR*). The profit-maximizing output is (3) ____ haircuts an hour. The price is determined by the demand curve (*D*) and is (4) ____ a haircut.

The average total cost of a haircut is (5) ____, so economic profit, the blue rectangle, is (6) ____ - the profit per haircut (7) ____ multiplied by (8) ____ 3 haircuts.

Problem 2

Use the following table to work Problems 1 to 5. Minnie's Mineral Springs, a single-price monopoly, faces the market demand schedule:

Price (dollars per bottle)	Quantity demanded (bottles per hour)
10	0
8	1
6	2
4	3
2	4
0	5

1. a. Calculate Minnie's total revenue schedule.

b. Calculate its marginal revenue schedule.

2. a. Draw a graph of the market demand curve and Minnie's marginal revenue curve.

b. Why is Minnie's marginal revenue less than the price?

3. a. At what price is Minnie's total revenue maximized?

b. Over what range of prices is the demand for water from Minnie's Mineral Springs elastic?

4. Why will Minnie not produce a quantity at which the market demand for water is inelastic?

5. Minnie's Mineral Springs faces the market demand schedule in Problem 5 and has the following total cost schedule:

Quantity produced (bottles per hour)	Total cost (dollars)
0	1
1	3
2	7
3	13
4	21
5	31

a. Calculate Minnie's profit-maximizing output and price.

b. Calculate the economic profit.

PART 8. MONOPOLISTIC COMPETITION AND OLIGOPOLY

Main questions

1. What is Monopolistic Competition?
2. Price and Output in Monopolistic Competition.
3. Advertising and the Mark-up.
4. What is Oligopoly?
5. Traditional Oligopoly Models.

Key Terms

efficient scale	dominant-strategy equilibrium
excess capacity	duopoly
markup	game theory
monopolistic competition	limit pricing
product differentiation	Nash equilibrium
signal	oligopoly
antitrust law	payoff matrix
cartel	predatory pricing
collusive agreement	resale price maintenance
contestable market	strategies
cooperative equilibrium	tying arrangement

Exercise 1.

For each question, mark the letter next to the correct answer.

1. Which of the following is a characteristic of the market structure for monopolistic competition?

a) barriers to entry;
b) a large number of firms compete;
c) each firm produces a differentiated product;
d) both answers B and C are correct.

2. Which characteristic is associated with monopolistic competition?

a) collusion;
b) product differentiation;
c) small number of firms;
d) awareness of rival firms in the market.

3. Monopolistic competition is a market structure in which

a) firms face barriers to entry;
b) a large number of firms compete;

c) firms produce and sell an identical product;
d) firms face perfectly elastic demand for their product.

4. Which of the following is NOT a characteristic of monopolistic competition?

a) a large number of firms compete;
b) entry and exit is restricted;
c) firms compete on product quality;
d) firms compete on price.

5. In a monopolistically competitive market there are:

a) many firms;
b) one firm;
c) a very small number of firms;
d) two firms.

6. Within a monopolistically competitive industry,

a) each firm faces a downward sloping demand curve;
b) firms can charge a higher price for a higher quality product;
c) firms are not able to collude because there are too many of them;
d) all of the above answers are correct.

7. In monopolistically competitive markets, products are ____ and entry is ____.

a) identical; free;
b) differentiated; free;
c) identical; hard;
d) differentiated; hard.

8. A monopolistically competitive firm has ____ power to set the price of its product because ____.

a) no; there are no barriers to entry;
b) some; there are barriers to entry;
c) no; of product differentiation;
d) some; of product differentiation.

9. One difference between perfect competition and monopolistic competition is that:

a) a perfectly competitive industry has fewer firms;
b) in perfect competition, firms produce slightly differentiated products;
c) monopolistic competition has barriers to entry;
d) firms in monopolistic competition face a downward-sloping demand curve.

10. In monopolistic competition, each firm has a demand curve with:

a) a negative slope, and there are no barriers to entry into the market;
b) a slope equal to zero, and there is are no barriers to entry into the market;
c) negative slope, and there are barriers to entry into the market;
d) a slope equal to zero, and there are barriers to entry into the market.

11. Firms in monopolistic competition always will:

a) earn an economic profit;
b) set their price equal to their marginal cost;
c) set their price above their marginal cost;
d) produce at the minimum average total cost.

12. In monopolistic competition, in the short run a firm maximizes its profit by selecting an output at which marginal cost equals:

a) average total cost;
b) marginal revenue;
c) price;
d) zero.

13. When only a small number of producers compete with each other is a defining characteristic of:

a) inelastic supply;
b) monopolistic competition;
c) efficient competition;
d) oligopoly.

14. In oligopolistic markets,

a) there are many firms;
b) there are no barriers to entry;
c) there are only a few firms;
d) all firms are price takers.

15. One difference between oligopoly and monopolistic competition is that:

a) a monopolistically competitive industry has fewer firms;
b) in monopolistic competition, the products are identical;
c) monopolistic competition has barriers to entry;
d) fewer firms compete in oligopoly than in monopolistic competition.

16. Of the following market structures, which has the fewest number of firms competing against each other?

a) monopolistic competition;
b) oligopoly;
c) perfect competition;
d) both answers A and C are correct.

17. Which of the following is a basic assumption of the kinked demand curve oligopoly model?

a) if a firm raises its price, other firms will not raise their prices;
b) if a firm raises its price, other firms will raise their prices;
c) if a firm cuts its price, other firms will raise their prices;
d) a firm always produces at an output level where marginal revenue is increasing.

18. In the kinked-demand curve model of oligopoly, the firm's marginal revenue curve:

a) is kinked at the output level at which the demand curve is kinked;

b) is kinked at an output level that is greater than that at which the demand curve is kinked;

c) has a gap at the output level at which the demand curve is kinked;

d) has a gap at an output level that is greater than that at which the demand curve is kinked.

19. The kinked demand curve model of oligopoly predicts that:

a) the price the firm sets does not change if there are small changes in the firm's marginal costs;

b) the price the firm sets does not change if there are large changes in the firm's marginal costs;

c) price wars in the industry are common;

d) the prices charged by any of the firms in the industry never change.

20. Game theory proves most useful for analyzing:

a) perfect competition;

b) monopolistic competition;

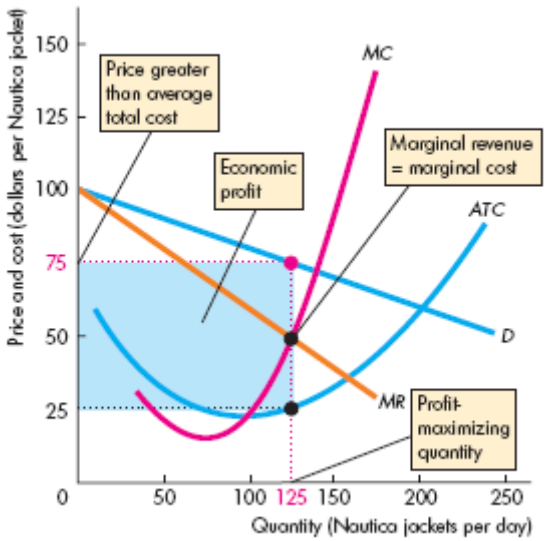
c) oligopoly;

d) monopoly.

Exercise 2. ***Solve problems.***

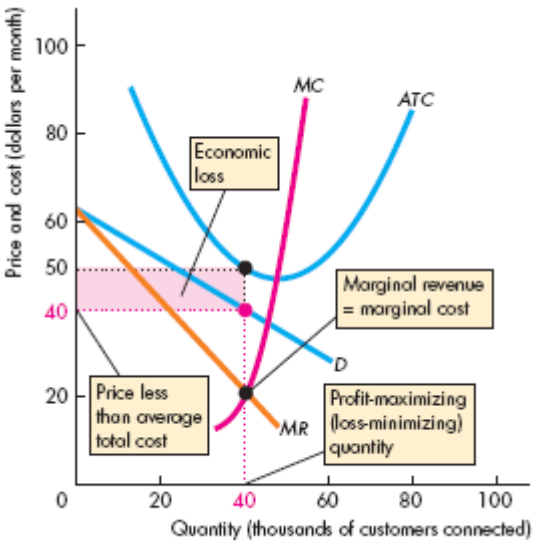
Problem 1

For each question, fill in the missing information in the numbered space.



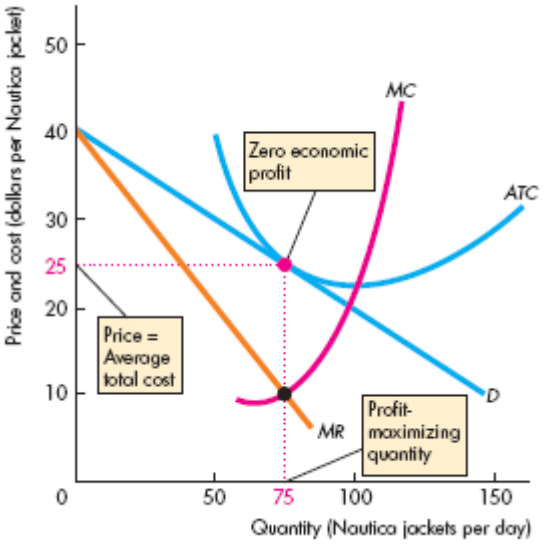
Economic Profit in the Short Run

Nautica maximizes profit by producing the quantity at which marginal revenue (1) ____ marginal cost, (2) ____ jackets a day, and charging the price of (3) ____ a jacket. This price exceeds the average total cost of (4) ____ a jacket, so the firm makes an economic profit of (5) ____ a jacket. The blue rectangle illustrates economic profit, which equals (6) ____ a day ((7) ____ a jacket multiplied by (8) ____ jackets a day).



Economic Loss in the Short Run

Profit is maximized where marginal revenue equals marginal cost. The loss-minimizing quantity is (9) ____ customers. The price of (10) ____ a month is less than the average total cost of (11) ____ a month, so the firm incurs an economic loss of (12) ____ a customer. The red rectangle illustrates economic loss, which equals (13) ____ a month ((14) ____ a customer multiplied by (15) ____ customers).



Output and Price in the Long Run

Economic profit encourages entry, which decreases the demand for each firm's product. When the demand curve touches the *ATC* curve at the quantity at which (1) ____ equals (2) ____, the market is in long-run equilibrium. The output that maximizes profit is (3) ____ jackets a day, and the price is (4) ____ per jacket. Average total cost is also (5) ____ per jacket, so economic profit is (6) ____.

PART 9. MARKETS FOR LABOR

Main questions

1. Labor Market Trends
2 .Labor and Wage
3. Organized Labor

Key Terms

labor force participation rate
employer-specific human capital
economic rents
bilateral monopoly
compensating wage differentials
efficiency wage theory
wage contours
dual labor markets
occupational segregation
marginal factor cost of labor
general human capital
signaling theory
monopsony
oligopsony
monitoring costs
employee morale
seniority
labor market discrimination
marginal revenue product of labor
backward-bending individual paid labor supply curve

Exercise 1.

For each question, fill in the missing information in the space.

1. The upward-sloping supply curve for labor reflects the _____ effect of a change in the wage.

2. The higher wages are, the more leisure people may want to «buy». This phenomenon can be described as the _____ effect of rising wages.

3. If a variation in wages produces little change in the quantity of labor supplied, we can say that the market labor supply is relatively _____.

4. The _____ theory of education suggests that the value of an advanced degree lies in the information it provides about how good a worker and learner the person holding the degree is likely to be.

5. Returns earned on factors that are in fixed supply, such as extraordinary sports ability, are referred to as economic _____.

6. A situation in which there is only one buyer for a good is known as _____.

7. A situation in which there is only one buyer and one seller is known as a _____ monopoly.

8. Suppose there are many talented musicians hoping to sell their music, and just a few record label buyers of musical works. This situation, in which there are just a few buyers, is known as _____.

9. A company that spends a lot of money on the salaries of inspectors and supervisors to oversee workers and make sure they keep up a high rate of production has high _____ costs.

10. Historically determined patterns of relative wages among occupations are known as wage _____.

11. A profit maximizing firm will hire workers up to the point where the marginal revenue product of labor is equal to the _____.

12. If a firm brings labor in a perfectly competitive labor market, it will maximize profits at the point where _____ is equal to wage.

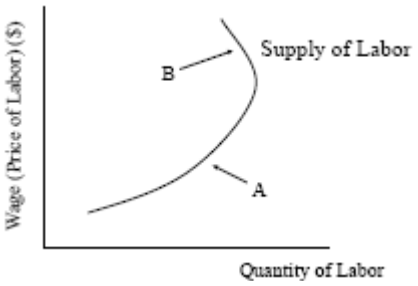
Exercise 2.

For each question, mark the letter next to the correct answer.

1. Which of the following would *not* be considered an opportunity cost of paid employment?

a) caring for an elderly relative;
b) education;
c) self-employment;
d) leisure;
e) transportation costs of commuting to work.

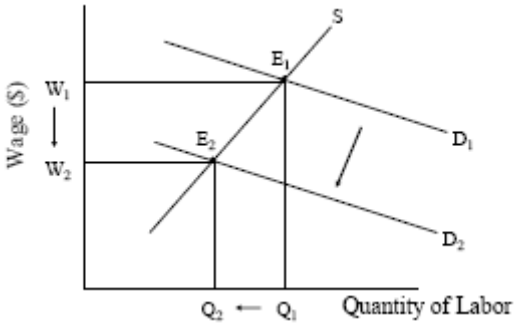
Question №2 refers to the following graph.



2. Which of the following statements is true?

a) the income effect is stronger than the substitution effect at point A;
b) the income effect is stronger than the substitution effect at point B;
c) this graph represents the market supply of labor;
d) an individual labor supply curve like that shown in the graph above could not occur in the real world;
e) the shape of the curve is determined by the average cost of production.

Question №3 refers to the graph shown below.



3. Suppose that the graph shown above depicts a change in the labor market for graphic designers. Which of the following events could have produced the change we see in this graph?

a) a new computer program allowed people to complete graphic designs automatically, without the aid of a trained designer;
b) many new graphic designers graduated from a top training program;
c) the wage offered for specialized graphic design services rose;
d) the market for graphic designers expanded;
e) none of the above.

4. A situation in which there are many sellers of labor but only one employer (i.e. buyer of labor) can be referred to as:

a) monopolistic labor;
b) monopoly;
c) monopsony;
d) competitive equilibrium;
e) labor equilibrium.

5. Suppose there is only one company that hires skilled machinists, and all skilled machinists belong to one union. This situation, in which a single employer faces a single seller of labor, is known as:

a) monopsony;
b) oligopsony;
c) oligopoly;
d) bilateral monopoly;
e) monopolistic competition.

6. Factors that might make one job more appealing than another include

a) working conditions;
b) wages;
c) amount of vacation offered;
d) both a and c are true;
e) a, b, and c are all true.

7. The notion that, all else equal, workers will accept lower wages for jobs with better characteristics is known as the theory of:

a) social contribution;
b) consumer sovereignty;
c) market power;
d) compensating wage differentials;
e) employee morale.

8. Efficiency wage theory holds that:

a) workers will work harder when they know their current employer is paying them more than they could get elsewhere;

b) workers work less when they know they are being overpaid;

c) employee morale is not a factor influencing total productivity;

d) raising wages is the best way to increase output per worker;

e) all of the above.

9. A situation in which some workers get high wages, job security, and other benefits while other workers, doing similar jobs, get low wages, no job security, and few other benefits, is known as:

a) an efficiency wage situation;

b) a wage contour;

c) a dual labor market;

d) a price discriminating labor force;

e) a high monitoring costs employment structure.

10. The tendency of men and women to be employed in different occupations is referred to as:

a) occupational segregation;

b) gender inequality;

c) racial segregation;

d) contour segregation.

e) occupational dysphoria.

11. Which of the following is *not* an assumption of the traditional model of the labor market?

a) the firm is a unitary decision maker;

b) the firm is interested only in profit maximization;

c) the firm faces a convex decision problem;

d) the firm faces multiple equilibria;

e) all of the above are true.

12. When a firm hires an additional worker, all else being equal, which of the following statements is false?

a) costs rise by the amount of the additional wages paid;

b) revenue increases;

c) revenue only increases if the firm makes a positive profit;

d) profits may or may not increase;

e) output increases.

13. A profit-maximizing firm should keep hiring more labor until the point where the marginal revenue product of labor is equal to:

a) marginal productivity of capital;
b) factor cost of capital;
c) monopolistic wage;
d) marginal factor cost of labor;
e) marginal factor cost of fixed assets.

14. If a firm can maximize profit simply by setting MRPL=wage, then we know that the firm must be:

a) a monopolist;
b) a monopsonist;
c) an oligopolist;
d) a monopolistic producer;
e) operating in a perfectly competitive labor market.

15. Which of the following statements is true regarding monopsonistic employers?

a) they hire more workers than firms that operate in perfectly competitive markets;
b) they pay workers more than their marginal revenue product of labor;
c) they pay workers less than firms that compete in labor markets;
d) they reward workers better than oligopsonistic firms;
e) both a and c are true.

16. From the perspective of an individual, the upward-sloping labor supply curve reflects the _____ effect of changes in wages.

a) income;
b) substitution;
c) downward;
d) backward-bending;
e) upward.

17. Which of the following jobs is most likely to have a relatively inelastic labor supply curve?

a) cashier;
b) garbage collector;
c) janitor;
d) nuclear physicist;
e) none of the above.

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для студентів спеціальності 073 «Менеджмент»

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