



2) If  $p_1 = 10$ ,  $p_2=100$ , and  $Y=1000$   
a. Draw the budget constraint.

b. Show how you can derive the price consumption curve for a given consumer's preferences (drawn as you like so long as they obey the properties of indifference curves discussed in class) using the example of the budget line from (a) with  $p_1 = 10$ , a budget line if  $p_1 = 5$  all else constant, and a budget line of  $p_1 = 20$  all else constant.

c. Show how to derive the individual's demand curve from the graph in (b).

3) Market structure and externalities. The inverse demand curve is given as  $p=116-2q$ . The supply curve is  $p=20+4q$ .

a. What is the equilibrium price quantity pair if the market structure is perfectly competitive?

b. If there is a marginal externality generated by production of the good equal to  $2*q$  ( $MC^E=2*q$ ), what is the socially optimal price quantity pair ?

c. If the market structure is a monopoly, what is the equilibrium price quantity pair chosen by the monopolist?



5) Circle the correct answer

Condition A	Condition B	What type of condition is B for establishing A?
MC is above AC at q	AC is upward sloping at q	N, NS   S, NN   N,S
The good is homogeneous	The market is perfectly competitive	N, NS   S, NN   N,S
The market is perfectly competitive	The good is homogeneous	N, NS   S, NN   N,S
Consumption of the good is characterized by rivalry.	The good is a private good	N, NS   S, NN   N,S
You can get to NYC from Syracuse in less than six hours.	There is a bus to NYC from Syracuse that makes the trip in less than six hours.	N, NS   S, NN   N,S
The good is a public good.	The good is characterized by non-exclusion	N, NS   S, NN   N,S
A quantity is the profit maximizing quantity	The quantity is produced in a technologically efficient way.	N, NS   S, NN   N,S
The last dollar rule is satisfied at a bundle	MRS=MRT at a bundle	N, NS   S, NN   N,S

N,NS : Necessary, not sufficient

S, NN: Sufficient, not necessary

N, S: Necessary and sufficient.

6) The price of a loaf of bread has gone up in Central New York over a one year period. Assume each explanation listed below is hypothesized to be the sole cause of this price increase. Which of the following explanations can you rule out, and which can you not rule out.

Explanation	Rule out	Not Rule Out (circle)
Incomes in Central New York have increased since last year.	Rule out	Not Rule Out
Consumer preferences have shifted from sandwiches to wraps.	Rule out	Not Rule Out
The price of wheat has increased as part of the global increase in commodity prices.	Rule out	Not Rule Out
New packaging regulations require use of higher cost biodegradable plastic wrappers.	Rule out	Not Rule Out
A new labor agreement with the bakery workers' union has increased the wages of the workers in this sector.	Rule out	Not Rule Out
A new oven was developed that allows for significantly lower electricity use per loaf of bread baked and thus reduces production costs.	Rule out	Not Rule Out

7) Types of Goods.

a) What type of good goes in which blank?

	Rival	Non Rival
Exclusion		
Non Exclusion		

b) Illustrate how deriving the demand curve for a public good differs from deriving the demand curve for a private good, and explain how this difference relates to your answers to (a).

8) Public goods, voting, and benefit cost.

Jordan Elbridge High School is trying to decide what physical plant improvements to make to the High School Property. There are five families in the school district who will vote on the improvements. They are confronted with three proposals:

Proposal A: Replace wastewater treatment plant, connect to municipal sewage system, and replace and improve drainage system. Total cost is \$3,000 (\$600 each).

Proposal B: All of what is in proposal A plus a new artificial turf playing field surrounded by an all season track. Total cost is \$10,000 (\$2,000 each).

Proposal C: All of what is in proposal B plus heated locker rooms and stadium rest rooms. Total cost is \$20,000 (\$4,000 each)

This table records each household's WTP for each proposal.

	Proposal A	Proposal B	Proposal C
Taylor	\$1,000	\$1,800	\$3,500
Feeney	\$500	\$3,500	\$3,500
Badger	\$500	\$1,800	\$9,500
Bennett	\$1,600	\$1,900	\$3,000
McPeak	\$700	\$1,500	\$3,500

- a) Each household gets one yes vote. If they have WTP greater than cost for more than one proposal, they will give their yes vote to the proposal that has the greater difference between WTP and cost to that household. How will they vote? (circle)

	Proposal A		Proposal B		Proposal C	
Taylor	Yes	No	Yes	No	Yes	No
Feeney	Yes	No	Yes	No	Yes	No
Badger	Yes	No	Yes	No	Yes	No
Bennett	Yes	No	Yes	No	Yes	No
McPeak	Yes	No	Yes	No	Yes	No

- b) If the costs are present value costs, and the willingness to pay figures are present value benefits, what is the net present value of each proposal?

Proposal A	Proposal B	Proposal C

- c) Did voting lead us to select the proposal that had the highest net present value? Explain why or why not.



9) Cost.

a. Complete the following table.

Total Output	Fixed Cost	Total Cost	Variable Cost	Average Variable Cost	Average Fixed Cost	Average Cost	Marginal Cost
0	10		-----	-----	-----	-----	-----
1			15				
2		39					
3		54					
4						18	
5		92					20

b. Is this short run or long run cost information? Why?

c. If market price for the output produced is 15, what level of output is profit maximizing for a firm if the market structure is perfectly competitive?



11) The demand curve is given to you as  $q=400-50*p$ .

- a. Fill out the following table (use the relatively higher price / relatively lower quantity pair for the denominator in the elasticity calculation)

Price	Quantity	Elasticity
1		-----
2		
3		
4		
5		
6		

- b. Draw this demand curve with price on the y-axis and quantity on the x – axis. Identify the range over which this curve is elastic or inelastic.

12) Tax policy.

a. Illustrate on a supply and demand graph a specific tax of size  $\tau$  placed on consumers.

b. Illustrate on a supply and demand graph a specific tax of size  $\tau$  placed on producers.

c. Illustrate on a supply and demand graph the impact of an ad valorem tax rate of  $\alpha$  placed on consumers.



13) Avner Grief is an economist who studies the rise of medieval trade in the Mediterranean basin. He describes the following situation:

- A ruler of a city state can offer security to a visiting merchant. The ruler can protect the merchant from being robbed by the citizens of the city state at a cost of 1.
- The merchant has goods that cost him 1 to obtain elsewhere and transport to the city state if he decides to come. If they are sold in the city state, they earn revenue of 6, thus generating a profit of 5.
- The deal is that if the merchant comes with goods that generate a profit of 5 the ruler gets 2, the merchant keeps 3. The ruler thus nets 1 after paying the security cost [1 3 cell in the table]
- If the merchant does not come, no security costs are incurred; no goods are bought elsewhere to be sold in the city state, the ruler and the merchant get zero. [0 0 cell in the table]
- If the merchant comes and the ruler does not provide security, the ruler and his mob of citizens rob the stuff and sell it for profit of 6. The ruler keeps half (3), the mob keeps half (3). The merchant suffers a loss of -1. [3 -1 cell in the table]
- If the ruler pays for protection but the merchant does not come, the ruler pays the cost of protection, but gets no benefits, so suffers a loss of -1. [-1 0 cell in the table]

This can be summarized in the following table.

		Merchant	
		Come	Don't Come
Ruler	Protect	1 3	-1 0
	Don't protect	3 -1	0 0

a) Describe the best response strategies in this game and identify the Nash equilibrium outcome.

b) Does this model illustrate how a failure to coordinate actions leads to a sub-optimal outcome? If so, why. If not, why not?

15) Circle the correct answer.

Statement	The statement is (circle the correct answer)	
The slope of the isocost line is called the marginal rate of technical substitution.	True	False
Consumer surplus is calculated as the area under the demand curve and above price line.	True	False
In a perfectly competitive market the firm chooses $q$ such that $AC(q)=AVC(q)$ .	True	False
The slope of the budget line is defined by the negative ratio of the prices of the goods.	True	False
Marginal cost = cost of the input / marginal product.	True	False
The bisection rule allows us to derive the marginal cost curve from a linear demand curve.	True	False
Microeconomics is the study of the allocation of scarce resources amongst competing alternatives.	True	False
A supply elasticity is the % change in price divided by the % change quantity supplied.	True	False

Work Page