

Name : _____

Student number: _____

ECO1104A INTRODUCTION TO MICROECONOMICS
MIDTERM EXAMINATION

Professor: David Gray

Fall 2006

INSTRUCTIONS

- a) The allotted time is one hour and twenty minutes. There are a total of 80 points, or one point per minute.
- b) Turn off all cellular telephones.
- c) You may not consult with any written materials whatsoever, including other students' papers, and no conversation is permitted while the examination is in progress. You may not use palm pilots. The only electronic devices that are permitted are non-programmable calculators and dictionaries for students whose native tongue is not English. Any contravention of these rules will be treated as an infraction to the honour code of the university.
- d) Good luck. I anticipate that some of you will be pressed for time. Please pace yourself accordingly, and respond carefully. **DO NOT SPEND TOO MUCH TIME ON ANY ONE QUESTION.**
- e) All of the questions which follow are very straightforward, and can be answered in a few sentences. The responses that I hope to elicit have been repeated by me several times in class. Please take a minute to concentrate on the question being asked, as opposed to writing down everything which comes to your mind about a certain topic. I have tried to pose the questions in such a way that you focus correctly.

PART I – SHORT ANSWER QUESTIONS

1) (4 points; 2-3 sentences) Identify and give the significance of the price elasticity of demand. In other words, what is its purpose? In still other words, why do we bother studying it? Do not give details concerning the price elasticity of demand. What I am looking for here is a brief discussion of how it fits in with supply and analysis.

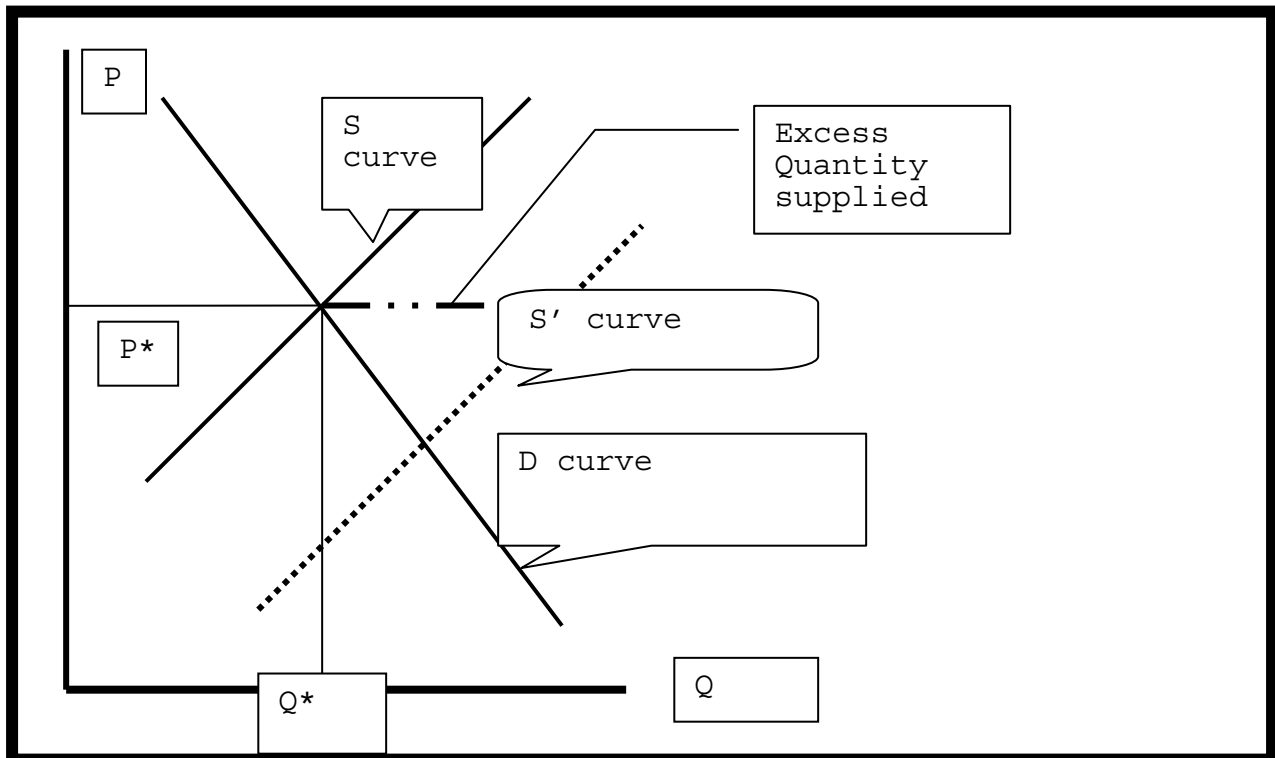
IT IS CALCULATED AS THE % CHANGE IN QUANTITY DEMANDED DIVIDED BY THE % CHANGE IN PRICE. IT INDICATES THE RESPONSIVENESS OF QUANTITY DEMANDED TO CHANGES IN PRICE. THE LAW OF DEMAND SAYS THAT THERE IS ALWAYS A NEGATIVE, INVERSE RELATIONSHIP BETWEEN PRICE AND QUANTITY DEMANDED. THE PRICE ELASTICITY OF DEMAND IS A TOOL THAT MEASURES THE DEGREE OF RESPONSIVENESS.

2) (4 points; 2 sentences) How does the model of supply and demand relate to the first central coordination task that faces any economy - what goods and services should be produced, and in what quantities? Do not draw the graph, as this is strictly a verbal question.

THE EQUILIBRIUM QUANTITY THAT IS ENERATED ON THE QUANTITY AXIS SHOWS HOW MUCH OF A GOOD WILL BE PRODUCED IN A FREE MARKET ECONOMY.

3) (4 points) Consider a situation in which the market for buggy whips (a favorite example of the professor that I had for this class in 1978) is in equilibrium. Now assume that there is a rightward shift in the supply curve. Explain how we arrive at a new equilibrium in this market. This entails explaining the path by which prices and quantities change. Do not draw the graph, as this is strictly a verbal question.

THE OLD EQUILIBRIUM IS P^* . AFTER THE SHIFT IN SUPPLY, AT THE GOING PRICE, THERE IS A SITUATION OF EXCESS QUANTITY SUPPLIED, WHICH MEANS A SURPLUS. THIS PLACES DOWNWARD PRESSURE ON PRICES. AS THE PRICE FALLS, QUANTITY SUPPLIED DECREASES DUE TO THE LAW OF SUPPLY, AND QUANTITY DEMANDED INCREASES DUE TO THE LAW OF DEMAND. EVENTUALLY PRICE ADJUSTS SUCH THAT QUANTITY SUPPLIED = QUANTITY DEMANDED, AND THERE IS NO FURTHER PRESSURE FOR PRICE CHANGES. THE NEW EQUILIBRIUM PRICE IS LOWER, THE NEW EQUILIBRIUM QUANTITY IS HIGHER.



4) (8 points)

a) Explain why governments regulate the prices and quantities of certain commodities, particularly in the agricultural sector.

FOR CERTAIN MARKETS, SOCIETY DECIDES (OR THE GOVERNMENT DECIDES) THAT THE MARKET PRICE IS NOT SOCIALLY FAIR AND/OR EQUITABLE. SOCIETY DEEMS THAT EITHER THE DEMANDERS OR THE SUPPLIERS (BUT NEVER BOTH IN THE SAME MARKET) WOULD SUFFER GREAT HARDSHIP IF THE MARKET PRICE WERE TO PREVAIL.

b) Explain why most economists tend to be very critical of interventions such as price floors and price ceilings. You do not need to give any graph. What I am looking for is an explanation of the economic behaviour that follows the imposition of these policies, and a description of the economic outcome.

IMPOSING PRICE FLOORS AND CEILINGS INVOLVES TAMPERING WITH PRICES SO THAT THOSE PRICES DEVIATE FROM THE EQUILIBRIUM PRICES. ONCE THIS PRICE DIFFERENTIAL OCCURS, BOTH DEMANDERS AND SUPPLIERS RESPOND TO THE CHANGING PRICES BY ALTERING THEIR BEHAVIOUR. THE PRICE CHANGE DISTORTS THEIR CHOICES SUCH THAT QUANTITY DEMANDED AND QUANTITY SUPPLIED BOTH MOVE IN DIRECTIONS THAT CONTRAVENE THE INTENDED EFFECT OF MAKING EITHER DEMANDERS OR SUPPLIERS BETTER OFF. PRICE FLOORS CAUSES SURPLUSES TO EMERGE, WHILE PRICE CEILINGS CAUSE SHORTAGES TO EMERGE.

c) What type of alternative policy instrument do economists recommend if the objective is to make a certain group of economic agents better off?

THE NEEDY, DESERVING GROUP, WHETHER IT IS EITHER SUPPLIERS OR DEMANDERS, SHOULD BE GIVEN A SUM OF MONEY THAT SUFFICES TO MAKE THEM BETTER OFF. THIS SO-CALLED LUMP SUM PAYMENT SHOULD BE INDEPENDENT OF THE PRICE RECEIVED OR THE QUANTITY BOUGHT OR THE QUANTITY PRODUCED. IT IS BETTER TO JUST GIVE THEM THE MONEY WITH NO STRINGS ATTACHED, WHICH MEANS THAT THEY CAN SPEND IT AS THEY PLEASE. THE KEY IS THAT THE LUMP-SUM PAYMENT SHOULD NOT AFFECT EITHER THE QUANTITY DEMANDED OR THE QUANTITY SUPPLIED.

NOTE: WITH ONE EXCEPTION, THIS PART OF THE EXAM WAS IDENTICAL TO LAST YEAR'S TEST. FOR THAT REASON, I EXPECT STRONG ANSWERS.

5. (3 points, 2-3 sentences) Explain briefly the nature of the difference between microeconomics

and macroeconomics.

THE PRIMARY DIFFERENCE LIES IN THE SCOPE. THEY BOTH DEAL WITH MARKETS AND EQUILIBRIUM PRICES AND QUANTITIES. THE MARKETS IN MACROECONOMICS ARE AGGREGATED AT THE LEVEL OF THE ENTIRE ECONOMY. FOR MICROECONOMICS, WE DEAL WITH THE BEHAVIOUR OF HOUSEHOLDS, FIRMS, AND INDUSTRIES. SEE PAGE 28.

6. (3 points, 2 sentences) Identify and give the significance of consumer surplus. In other words, why do we bother studying it? In other words, what is its purpose?

IT IS A MEASURE OF CONSUMER WELL-BEING OR WELFARE. IT IS CALCULATED AS THE DIFFERENCE BETWEEN CONSUMERS' WILLINGNESS TO PAY AND THE REQUIREMENT TO PAY. IT IS THE BENEFIT THAT THE CONSUMERS DERIVE FROM PARTICIPATING IN THE MARKET. SEE PAGE 141.

7. (3 points, 2 sentences) What is generally the role of models in economic analysis? In other words, what is their function?

THEY ARE AN ANALYTICAL TOOL THAT IS USED TO EXPLAIN HOW THE ECONOMY FUNCTIONS. TYPICALLY THE CHANGES IN ONE ECONOMIC VARIABLE ARE RELATED TO CHANGES IN ONE OR SEVERAL OTHER ECONOMIC VARIABLES. THEY ARE OFTEN STATED IN HYPOTHESIS FORM – IF THERE IS A CHANGE IN ONE VARIABLE, ALL OTHER FACTORS HELD CONSTANT, WHAT IS THE CHANGE IN ANOTHER ECONOMIC VARIABLE? SEE PAGE 24.

8. (9 points)

a) Explain why the production possibilities frontier has a concave shape.

IT IS DUE TO THE LAW OF INCREASING OPPORTUNITY COSTS. AS PRODUCTION OF GOOD X IS INCREASED, THE OPPORTUNITY COST IN TERMS OF GOOD Y GIVEN UP INCREASES. WE HAVE TO GIVE UP MORE AND MORE OF GOOD Y IN ORDER TO GET EQUAL INCREMENTS OF PRODUCTION OF GOOD X. IN OTHER WORDS, WE FACE A DECREASING TRADEOFF WHEN WE SEEK TO INCREASE THE PRODUCTION OF EITHER GOOD. SEE PAGE 27.

b) What would be implied if the frontier has the form of a straight line?

THERE WOULD BE CONSTANT OPPORTUNITY COSTS, SO THE TRADEOFF BETWEEN THE TWO GOODS IS EVEN.

c) Explain why the production possibilities frontier has a negative slope.

IT IS DUE TO SCARCITY. IF WE WANT TO INCREASE PRODUCTION OF ONE

GOOD, WE MUST SACRIFICE SOME OF THE OTHER GOOD. IN OTHER WORDS, THERE IS A TRADEOFF ONCE WE ARE ON THE FRONTIER. IT HAS NOTHING TO DO WITH OPPORTUNITY COSTS.

9. (4 points) Explain the relationship between comparative advantage, specialization, and the pattern of international trade (this means which country imports and/or exports which good).

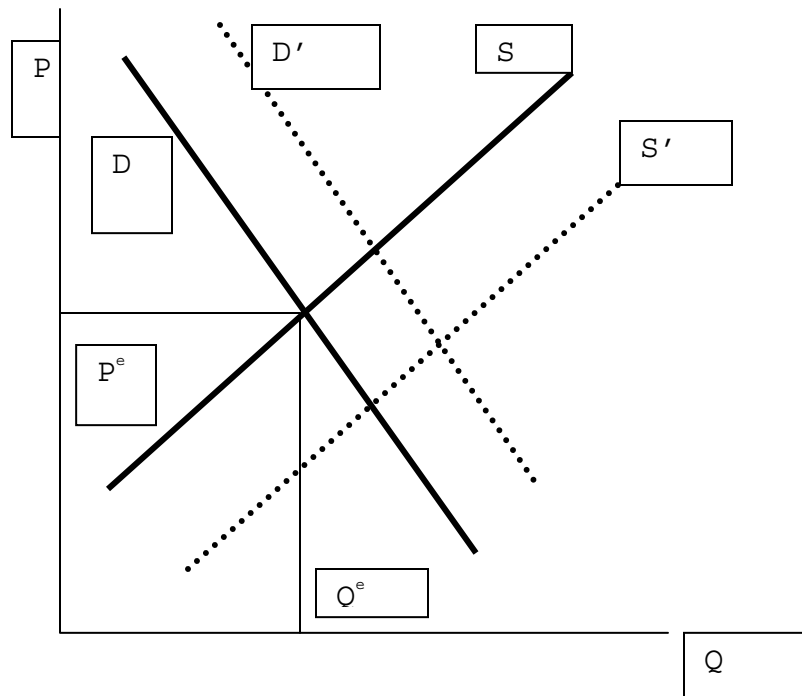
A COUNTRY SHOULD SPECIALIZE IN THE PRODUCTION OF THE GOOD IN WHICH IT HAS A COMPARATIVE ADVANTAGE. IT SHOULD DEVOTE EITHER ALL OR MOST OF ITS RESOURCES TO THE PRODUCTION OF THAT GOOD, AND LITTLE OR NONE OF ITS RESOURCES TO THE PRODUCTION OF THE OTHER GOOD. IT SHOULD CONSUME SOME OF ITS PRODUCTION OF THE GOOD IN WHICH IT SPECIALIZES, AND IT SHOULD THEN EXPORT THE REST. IT CAN USE THE PROCEEDS FROM ITS EXPORT SALES TO PURCHASE IMPORTS FROM ITS TRADING PARTNER. IT IMPORTS THE GOOD IN WHICH IT HAS A COMPARATIVE DISADVANTAGE.

PART II – PROBLEMS AND GRAPHING

10. (12 points) Here is a problem from the first economics evaluation that I ever took (April, 1978). Consider the market for marijuana (I know that none of you participate in it, either a consumer or a producer. You are only analyzing it from the perspective of dispassionate, scientific observer.)

a) Depict this market in equilibrium using the axes below. Label all axes and curves.

YOU HAD TO LABEL THE AXES AND THE CURVES. THE EQUILIBRIUM PRICE IS P^e , AND THE EQUILIBRIUM QUANTITY IS Q^e . NOTE: THIS PART A IS A GIVEAWAY.



b) Now assume that the government cedes to pressure from the marijuana party (there really is such an organization) and legalizes marijuana. What impact would we expect this to have on the market? Indicate which curve(s) shift(s), if any. Explain your work. For example, if you decide that the supply curve shifts, explain the cause (in words). Depict the changes and the new equilibrium on the graph.

BECAUSE THE COSTS OF OPERATION DECLINE A LOT, S SHIFTS TO RIGHT. AT EACH POSSIBLE PRICE, FIRMS ARE WILLING TO PRODUCE AND SELL MORE THAN THEY WERE BEFORE THE LEGALISATION. BECAUSE THERE IS NO LONGER ANY PENALTY FOR CONSUMING THE SUBSTANCE, CONSUMER TASTES BECOME SLIGHTLY MORE FAVORABLE. D SHIFTS TO THE RIGHT. AT EACH POSSIBLE PRICE, CONSUMERS ARE WILLING TO BUY MORE THAN THEY WERE BEFORE THE LEGALISATION. THE NEW EQUILIBRIUM PRICE COULD BE HIGHER OR LOWER DEPENDING ON THE MAGNITUDES OF THE SHIFTS OF THE TWO CURVES, BUT EQUILIBRIUM QUANTITY WILL DEFINITELY RISE.

c) Return to the initial equilibrium. Suppose that instead of legalizing marijuana, the government decides to lower the going price, so that we can take (i.e. get high on the stuff) more cheaply (after the exam, that is). What impact would we expect this to have on the market? Indicate which curve(s) shift(s), if any. Explain your work.

NEITHER OF THE CURVES WILL SHIFT. INSTEAD, WE WILL END UP WITH A

SITUATION OF EXCESS QUANTITY DEMANDED, OR A SHORTAGE.

11. (6 points) Here is a problem concerning elasticities that are drawn from the textbook.

a) for each of the following pairs of goods, which good would you expect to have more elastic demand, and why?

i) required textbooks versus mystery novels

REQUIRED TEXTBOOKS WOULD HAVE A LOWER ELASTICITY, SO THEY WOULD HAVE AN INELASTIC P.E.D. AS THEY ARE A NECESSITY IF ONE IS ENROLLED IN A COURSE. IN ADDITION, THERE ARE NO SUBSTITUTES FOR THE REQUIRED TEXTBOOK.

ii) Beethoven recordings versus classical music recordings in general

BEETHOVEN RECORDINGS SHOULD HAVE A MORE ELASTIC DEMAND AS MORE SUBSTITUTES ARE AVAILABLE, SUCH AS THE WORKS OF OTHER CLASSICAL COMPOSERS SUCH AS MOZART AND BACH. CLASSICAL MUSIC IN GENERAL IS A MORE BROADLY DEFINED GOOD, AND AS SUCH IS LIKELY TO HAVE FEWER SUBSTITUTES. IF ONE LIKES CLASSICAL MUSIC, ONE IS NOT LIKELY TO CARE FOR NEW WAVE OR JAZZ MUSIC.

iii) heating oil during the next six months versus heating oil during the next 5 years

THE LATTER IS LIKELY TO HAVE MORE ELASTIC P.E.D., AS THE TIME PERIOD IS MUCH LONGER. OVER THE SHORT TERM, CONSUMERS CANNOT ADJUST THEIR BUYING HABITS VERY MUCH IF THERE IS A MAJOR CHANGE IN THE PRICE OF HEATING OIL. OVER THE LONG TERM, CONSUMERS CAN ADJUST THEIR BUYING HABITS IF THERE IS A MAJOR CHANGE IN THE PRICE OF HEATING OIL.

NOTE: FOR ALL OF THESE, SEE THE SOLUTIONS TO THE END-OF-CHAPTER EXERCISES, CHAPTER 5, # 1, WHICH ARE POSTED ON THE WEBSITE.

12. (8 points) Here is a problem concerning elasticities that is drawn from the textbook.

Suppose that your demand schedule for compact discs is as follows:

Price	Quantity demanded (income = \$10,000)	Quantity demanded (income = \$12,000)
\$ 8	40	50
10	32	45
12	24	30
14	16	20
16	8	12

a) Use the midpoint method to calculate the price elasticity of demand as the price of CDs increases from \$ 8 to \$ 10 if income is \$10,000. Show your work.

$$\text{P.E.D.} = (\% \text{ CHANGE IN Qd}) / (\% \text{ CHANGE IN P}) = (\text{CHANGE IN Qd} / \text{AVERAGE Qd}) / (\text{CHANGE IN P} / \text{AVERAGE P}) = (-8 / 26) / (+ 2 / 9) = - 1.0$$

b) Determine whether this demand is price elastic or inelastic based on your calculated value.

UNITARY PRICE ELASTICITY OF DEMAND

c) Determine whether this demand is price elastic or elastic based on the relationship between the price elasticity of demand and total revenue.

AT P = \$ 8, TOTAL REVENUE = P*Q = \$ 320

AT P = \$ 10, TOTAL REVENUE = P*Q = \$ 320

SINCE THERE IS NO CHANGE IN TOTAL REVENUE DESPITE THE PRICE INCREASE, THE PRICE INCREASE (25 %) IS PROPORTIONAL TO THE DECREASE IN QUANTITY DEMANDED (25 %). THIS MEANS THAT THE P.E.D. IS UNITARY ELASTIC.

d) Based on the two demand relationships, are CDs an inferior good or a normal good? Explain why.

AS INCOME INCREASES, THE QUANTITY DEMANDED AT EACH POSSIBLE PRICE INCREASES. THIS MEANS THAT DEMAND HAS RISEN. IT MUST BE A NORMAL GOOD.

NOTE: SEE THE SOLUTIONS TO THE END-OF-CHAPTER EXERCISES, CHAPTER 5, # 3, WHICH ARE POSTED IN THE COURSEWEB.

13. (12 points) Here is a problem concerning welfare economics that is drawn from the textbook.

It is a hot day, and Bert is thirsty. Here is the value that he places on a bottle of water:

Value for the first bottle	\$ 7
Value for the second bottle	\$ 5
Value for the third bottle	\$ 3
Value for the fourth bottle	\$ 1

Ernie, who is Bert's buddy, owns a water pump. Because pumping large amounts of water is harder than pumping small amounts, the cost of producing a bottle of water rises as he pumps more. Here is the cost he incurs to produce each bottle of water.

Cost for the first bottle	\$ 1
Cost for the second bottle	\$ 3
Cost for the third bottle	\$ 5
Cost for the fourth bottle	\$ 7

a) If the price of bottled water is \$4 per bottle, how many bottles does Bert buy? Explain why in words. How much consumer surplus does he derive from his purchases? Explain.

HE BUYS TWO BOTTLES. HE VALUES THE FIRST BOTTLE AT \$ 7, SO OF COURSE HE WILL BUY IT IF THE PRICE IS ONLY 4 \$. HE VALUES THE SECOND BOTTLE AT \$ 5, SO OF COURSE HE WILL BUY IT IF THE PRICE IS ONLY 4 \$. HE VALUES THE THIRD BOTTLE AT \$ 3, SO HE WILL NOT BUY IT IF THE PRICE IS 4 \$. CONSUMER SURPLUS = WILINGNESS TO PAY – REQUIREMENT TO PAY. FOR THE FIRST BOTTLE, THIS = \$ 7 - \$ 4 = \$ 3. FOR THE SECOND BOTTLE, THIS = \$ 5 - \$ 4 = \$ 1. THE TOTAL VALUE OF CONSUMER SURPLUS IS \$ 3 + \$ 1 = \$ 4.

b) If the price of bottled water is \$4 per bottle, how many bottles does Ernie produce and sell? Explain why in words. How much producer surplus does he derive from his sales? Explain.

HE SELLS TWO BOTTLES. HE VALUES THE FIRST BOTTLE AT \$ 1, SO OF COURSE HE SELL IT IF THE PRICE IS 4 \$. HE VALUES THE SECOND BOTTLE AT \$ 3, SO OF COURSE HE SELL IT IF THE PRICE IS 4 \$. HE VALUES THE THIRD BOTTLE AT \$ 5, SO HE WILL NOT SELL IT IF THE PRICE IS ONLY 4 \$. PRODUCER SURPLUS = REQUIREMENT TO PAY – PRODUCERS' VALUATION. FOR THE FIRST BOTTLE, THIS = \$ 4 - \$ 1 = \$ 3. FOR THE SECOND BOTTLE, THIS = \$ 4 - \$ 3 = \$ 1. THE TOTAL VALUE OF PRODUCER SURPLUS IS \$ 3 + \$ 1 = \$ 4.

NOTE: SEE THE SOLUTIONS TO THE END-OF-CHAPTER EXERCISES, CHAPTER 7, # 4, WHICH ARE POSTED IN THE COURSEWEB.

c) Consider the market in which Bert is the buyer and Ernie is the seller. The equilibrium price is \$ 4 per bottle, and the equilibrium quantity is 2 units. Explain why this is the case. What is the level of total surplus in this equilibrium?

**QUANTITY DEMANDED = QUANTITY SUPPLIED AT THE PRICE OF \$ 4.
SOMEWHERE BETWEEN QUANTITY = 2 AND QUANTITY = 3, BOTH BERT AND
ERNIE VALUE THAT MARGINAL UNIT BY THE SAME AMOUNT. TOTAL
SURPLUS = CONSUMER SURPLUS + PRODUCER SURPLUS = \$ 8.**

d) If Ernie produced and Bert consumed one less bottle of water, what would happen to total surplus? What does this imply about the equilibrium quantity?

**TOTAL SURPLUS MUST FALL SINCE WE ARE MOVING AWAY FROM THE
EQUILIBRIUM, AND AT THAT LEVEL OF OUTPUT, TOTAL SURPLUS IS
MAXIMIZED IF THERE ARE NO EXTERNALITIES. IF ONLY ONE BOTTLE WERE
PRODUCED AND CONSUMED, TOTAL SURPLUS WOULD BE \$ 6 INSTEAD OF \$ 8.**