

Economics 2
Winter 2005

your name _____
your TA's name _____
day and time of your discussion section _____

FINAL EXAM

DIRECTIONS: No calculators, books, or notes of any kind are allowed. All papers and notebooks must remain closed and on the floor at all times throughout the exam, and students are not allowed to leave the examination room until finished. Answer all questions in the space provided with the exam. 210 points are possible on this exam.

HINTS: Feel free to use either of the following formulas if you find them useful.

Area of a triangle = $(1/2)$ (base) (height)

Area of a trapezoid = $(1/2)$ (base1 + base2) (height)

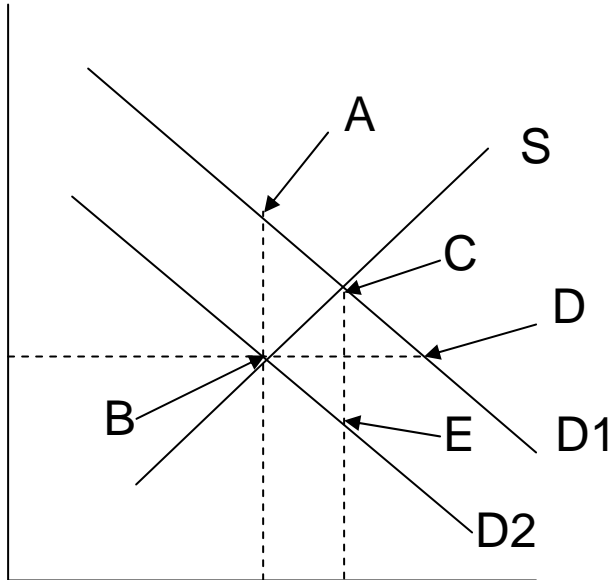
PART I: MULTIPLE CHOICE—circle the correct answer (4 points each, 160 points total)

- 1.) Which of the following best explains why a subsidy results in an inefficient use of resources?
 - a.) when firms receive the subsidy, they only pass some of it along as a cost saving to consumers but take much of it simply in the form of increased profits
 - b.) as a result of the subsidy, the marginal benefit to some consumers of receiving the good is less than the marginal cost of producing the good
 - c.) the subsidy increases producer surplus, but decreases consumer surplus by more than the increase in producer surplus
 - d.) the government has a difficult time figuring out which firms have the greatest need of getting the subsidy

- 2.) Suppose the government requires producers of a particular good to pay a \$1 tax for every unit of the good that they produce. Under what circumstances would the result be that firms simply raise the price they charge customers by \$1?
 - a.) only when the supply curve is perfectly elastic
 - b.) only when the supply curve is perfectly inelastic
 - c.) in any market that is characterized by perfect competition
 - d.) never

- 3.) Most U.S. airlines typically overbook, meaning that they sell more tickets than there are seats on the plane, assuming a certain fraction of the passengers who bought tickets won't actually show up. If all the passengers do show up, then some passengers get "bumped," meaning that they cannot go on the flight for which they purchased tickets and must take a later flight instead. Which of the following would be the most efficient way to decide which passengers get bumped?
 - a.) the airline offers to give financial compensation to passengers who are bumped and then bumps the passengers who will agree to take the later flight for the cheapest price
 - b.) the airline bumps those passengers who were the last ones to purchase their tickets
 - c.) the airline bumps those passengers who were the last ones to show up at the airport
 - d.) the airline randomly draws the names of the passengers who will be bumped

Question 4 refers to the following diagram in which D1 represents a demand curve before a tax is imposed on buyers, D2 is the demand curve after a tax is imposed on buyers, and S is the supply curve:



4.) The deadweight social loss that results from the tax is represented in the above diagram by the area of

- a.) triangle ABC
- b.) triangle BCD
- c.) triangle BCE
- d.) none of the above

5.) Which of the following statements is accurate for a monopolist practicing perfect price discrimination?

- a.) the marginal revenue of the Qth unit sold is greater than the price of the Qth unit sold
- b.) the marginal revenue of the Qth unit sold is equal to the price of the Qth unit sold
- c.) the marginal revenue of the Qth unit sold is less than the price of the Qth unit sold
- d.) marginal revenue could be greater than or less than price depending on the elasticities

6.) Suppose that a monopoly is created when Susie Q. Monopolist buys up two different factories. For factory 1, the marginal cost of producing the Q1th unit is MC3. For factory 2, the marginal cost of producing the Q2th unit is also MC3. Which of the following would be an accurate characterization of the resulting marginal cost curve for the monopolist?

- a.) the marginal cost of producing the $(Q_1 + Q_2)$ th unit is $2MC_3$
- b.) the marginal cost of producing the $(Q_1 + Q_2)$ th unit is MC_3
- c.) the marginal cost of producing the Q1th unit is MC_3
- d.) the marginal cost of producing the Q1th unit is greater than MC_3 but less than $2MC_3$

7.) Which of the following is the most accurate characterization of the quantity produced and price charged by a monopolist compared to the quantity produced and price charged under perfect competition?

- a.) when there is a monopoly, the quantity produced is higher and the price charged is higher
- b.) when there is a monopoly, the quantity produced is lower and the price charged is lower
- c.) when there is a monopoly, the quantity produced is lower and the price charged is higher
- d.) when there is a monopoly, the quantity produced is higher and the price charged is lower

8.) Which of the following is the most accurate characterization of the levels of producer surplus and consumer surplus when there is a monopoly compared to the levels of producer surplus and consumer surplus when there is perfect competition?

- a.) when there is a monopoly, the level of producer surplus is higher and the level of consumer surplus is higher
- b.) when there is a monopoly, the level of producer surplus is lower and the level of consumer surplus is lower
- c.) when there is a monopoly, the level of producer surplus is lower and the level of consumer surplus is higher
- d.) when there is a monopoly, the level of producer surplus is higher and the level of consumer surplus is lower

Question 9 refers to the following payoff matrix for an investment game between Firm A and Firm B:

		Firm B	
		invests	does not invest
Firm A	invests	A gets 3 B gets 5	A gets 6 B gets 4
	does not invest	A gets 4 B gets 6	A gets 2 B gets 5

9. Which of the following payoffs would result from the Nash equilibrium?

- a.) Firm A gets 3 and Firm B gets 5
- b.) Firm A gets 6 and Firm B gets 4
- c.) Firm A gets 4 and Firm B gets 6
- d.) Firm A gets 2 and Firm B gets 5

- 10.) Which of the following is not a characteristic of a prisoner's dilemma?
- a.) the Nash equilibrium is inefficient
 - b.) both players have a dominant strategy
 - c.) there may not be a Nash equilibrium
 - d.) both players have a dominated strategy
- 11.) Which of the following do you think is the most important reason why the Coase Theorem does not suggest a private solution to the problem of air pollution?
- a.) it is too costly for the people who care about air pollution to negotiate with the people who produce air pollution
 - b.) the Coase Theorem does not apply very well to the problem of externalities
 - c.) the marginal benefit of reducing air pollution is less than the marginal cost of reducing air pollution
 - d.) the marginal benefit of reducing air pollution is greater than the marginal cost of reducing air pollution
- 12.) Which of the following could not be an example of the tragedy of the commons?
- a.) owners of two adjacent properties use inefficient methods in order to try to more rapidly extract oil from a single oil field that is underneath the two properties
 - b.) harvesting whales in international waters
 - c.) harvesting timber on remote public lands
 - d.) a private owner of land decides to graze his own goats on his land, which eat up the roots of all the grass and turns what was once productive pasture into a barren desert
- 13.) Which one of the following mitigates the negative effects of moral hazard?
- a.) raising the insurance premium
 - b.) lowering the insurance premium
 - c.) raising the insurance deductible
 - d.) lowering the insurance deductible
- 14.) Consider a gamble where you receive \$100 if a flipped coin comes up heads whereas you pay \$80 if the coin comes up tails. Which of the following statements is correct?
- a.) both a risk neutral person and a risk averse person would certainly take the gamble
 - b.) both a risk neutral person and a risk averse person might not take the gamble
 - c.) a risk neutral person would certainly take the gamble whereas a risk averse person might not take the gamble
 - d.) a risk averse person would certainly take the gamble whereas a risk neutral person might not take the gamble
- 15.) The problem in which insurance tends to be disproportionately purchased by those who are most costly for companies to insure is called
- a.) moral hazard
 - b.) statistical discrimination
 - c.) adverse selection
 - d.) the problem of credible commitment

- 16.) The implication of the market for lemons model is that
- a.) used cars that are for sale are of a lower average quality than used cars of the same model, make, and year that are not for sale
 - b.) the equilibrium is one in which buyers of used cars are always surprised at how bad the cars turn out to be
 - c.) the equilibrium is one in which sellers of used cars are always surprised that customers are unwilling to pay what the car is actually worth
 - d.) the equilibrium is one in which sellers of used cars advertise in order to send a costly signal that the used car they are selling is of high quality
- 17.) Raising the minimum wage
- a.) would benefit all those who are currently working for the minimum wage
 - b.) would benefit some and hurt others of those who are currently working for the minimum wage
 - c.) would hurt all those who are currently working for the minimum wage
 - d.) have no effect on those who are currently working for the minimum wage because firms would simply implement an equiproportionate decrease in non-wage benefits for those workers
- 18.) Economic theory suggests that the primary reason that some workers are paid a higher wage than others is
- a.) people working at different jobs have different values of marginal product
 - b.) pure discrimination has been entrenched in the society for so long that it is very hard to change
 - c.) some jobs have a tradition of paying a higher wage and these traditions are slow to change
 - d.) economic theory in fact does not offer a good explanation of why wages are so different
- 19.) The purpose of means-tested benefits programs is
- a.) to increase the incentive for low-income households to work more
 - b.) to make sure that the benefits go to the truly needy
 - c.) to make sure that everyone receives the same income
 - d.) to reduce dependence on other welfare programs
- 20.) An in-kind transfer payment to the poor refers to
- a.) financial assistance coming from a private charitable foundation
 - b.) a cash payment from the government
 - c.) a benefit in the form of a good or service
 - d.) a benefit implemented by means of a negative income tax
- 21.) The Rand Health Insurance Experiment compared families receiving full health insurance with those whose insurance policy called for the family to pay all health costs up to the first \$1,000. The study found that the second group
- a.) spent substantially less on health care and had substantially worse health outcomes
 - b.) spent about the same on health care and had about the same health outcomes
 - c.) spent substantially less on health care and had about the same health outcomes
 - d.) spent about the same on health care and had about the same health outcomes

- 22.) When one compares the wages of individuals who work at risky jobs with the wages of individuals who work at safe jobs, if other characteristics of the individual such as education, race, and gender are the same, studies have found that
- a.) the wages for the riskier jobs are lower, suggesting that there is substantial exploitation of workers from unsafe working conditions
 - b.) the wages for the riskier jobs are about the same, suggesting that workers are poorly informed about the risks they are taking
 - c.) the wages for the riskier jobs are very slightly higher, suggesting that the market values a statistical life at about \$2,500
 - d.) the wages for the riskier jobs are significantly higher, suggesting that the market values a statistical life at about \$5,000,000
- 23.) Suppose that there is perfect competition in the labor market, workers are well informed about workplace risks, and workers care only about the absolute level of income they receive rather than their income relative to other workers. Under these conditions, if there is no government supervision of workplace safety, then economic theory would predict that
- a.) workers will take more risks on the job than is economically optimal
 - b.) workers will take some risks on the job, but these risks are economically optimal
 - c.) workers will take less risks on the job than is economically optimal
 - d.) risks on the job would be eliminated altogether by competitive forces
- 24.) The risk of brown lung disease for workers who are exposed to cotton fibers in the air of textile plants was successfully reduced because
- a.) firms voluntarily decided to add better ventilation systems to the workplace
 - b.) firms were forced by the Occupational Safety and Health Administration to improve ventilation
 - c.) workers with a predisposition toward the illness quit their jobs in the textile industry
 - d.) the primary aggravating factor for the illness was whether the worker also smoked cigarettes, and cigarette smoking among textile workers has declined substantially
- 25.) As a result of issuing pollution permits under the Clean Air Act Amendments of 1990,
- a.) air pollution went up and differences in the amount of pollution emitted by different facilities went up
 - b.) air pollution went down and differences in the amount of pollution emitted by different facilities went down
 - c.) air pollution went down and differences in the amount of pollution emitted by different facilities went up
 - d.) air pollution went up and differences in the amount of pollution emitted by different facilities went down

26.) How would you compare the length of hospital stays under an insurance plan that pays 100% of a patient's hospital costs with those under an HMO in which the physician makes the determination of the length of hospital stay?

- a.) patients may stay longer than is economically optimal under the insurance plan and may stay longer than is economically optimal under the HMO
- b.) patients may stay shorter than is economically optimal under the insurance plan and may stay shorter than is economically optimal under the HMO
- c.) patients may stay shorter than is economically optimal under the insurance plan and may stay longer than is economically optimal under the HMO
- d.) patients may stay longer than is economically optimal under the insurance plan and may stay shorter than is economically optimal under the HMO

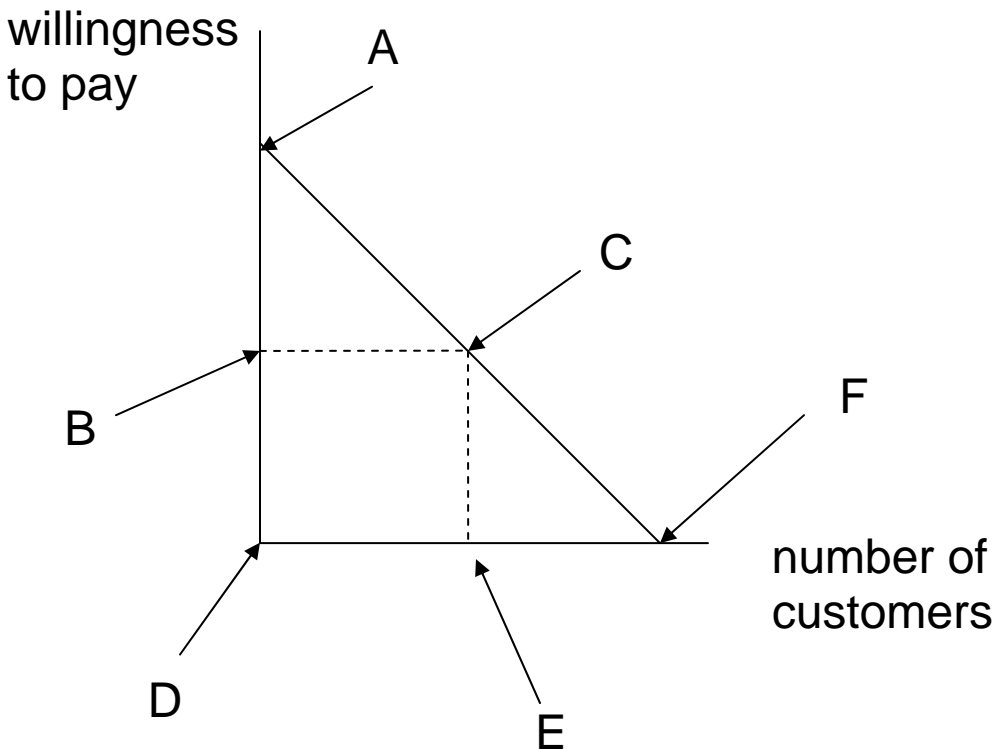
27.) A good that is nonrival and nonexcludable is called

- a.) a public good
- b.) a private good
- c.) a collective good
- d.) a commons good

28.) A good that is rival and nonexcludable

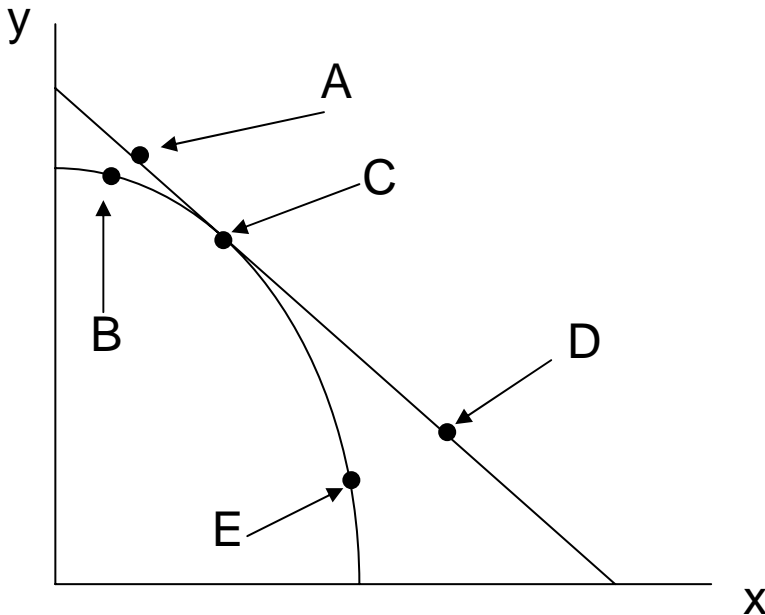
- a.) is called a semi-public good
- b.) is called a collective good
- c.) is called a commons good
- d.) is a physical impossibility

Question 29 refers to the following diagram for a collective good that can be produced at zero marginal cost. The provider of the good chooses to charge a price represented by the distance from D to B on the graph.



- 29.) The deadweight social loss associated with this price is represented by the area of
- a.) triangle ABC
 - b.) rectangle BCED
 - c.) triangle BCD
 - d.) triangle CEF
- 30.) Suppose that there are 10 million identical households in a particular country, each of whom has exactly the same income and preferences. For a public good, what is the relation between each individual's willingness to pay schedule and the total willingness to pay schedule?
- a.) the total willingness to pay schedule is exactly the same as the individual willingness to pay schedule
 - b.) at any given price of the public good, the quantity on the total willingness to pay schedule is exactly 10 million times the quantity on the individual willingness to pay schedule
 - c.) at any given quantity of the public good, the price on the total willingness to pay schedule is exactly 10 million times the price on the individual willingness to pay schedule
 - d.) none of the above
- 31.) Which of the following is not a very likely outcome when there is a public good that people value highly but is not provided by the government?
- a.) the private market would provide too little of the good
 - b.) the private market would provide too much of the good
 - c.) the private market would find a way to make the good excludable
 - d.) the private market would find a way to make a profit through sale of by-products
- 32.) The law firm of Amy, Bob, Carolyn, and Diego handles only wills and probates. The amount that each partner can handle in one week is as follows:
- Amy can handle 4 wills and 2 probates
 - Bob can handle 1 will and 1 probate
 - Carolyn can handle 9 wills and 3 probates
 - Diego can handle 5 wills and 2 probates
- If the law firm were to handle only 1 probate and all the rest wills in a given week, who should handle the probate?
- a.) Amy
 - b.) Bob
 - c.) Carolyn
 - d.) Diego

Questions 33 and 34 refer to the following diagram, which shows a country's production possibilities frontier between two goods, x and y . In answering these questions, you should assume that the world relative price of good x , that is, the number of units of good y you'd have to give up on the world market to get one more unit of good x , is greater than the relative price of good x that we would observe under autarky, and that this world relative price corresponds to the slope of the line passing through points ACD.



33.) Under autarky, this economy might be producing at the point

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

34.) Under free trade, this economy might be producing at the point

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

35.) The country of Freedonia uses the freepo as its currency while Sylvarnia uses the shleepo. Suppose that the nominal exchange rate used to be 2 freepo per shleepo and is now 3 freepo per shleepo. If the two countries had been allowing flexible exchange rates, we would say

- a.) the freepo appreciated
- b.) the freepo depreciated
- c.) the freepo was revalued
- d.) the freepo was devalued

36.) Let P denote the value of the consumer price index (CPI) in the U.S. and let P^* denote the value of the CPI in Mexico. If e denotes the nominal exchange rate (measured in dollars per peso), then the real exchange rate is calculated as

- a.) PP^*e
- b.) $(Pe)/P^*$
- c.) $P/(P^*e)$
- d.) $1/(PP^*e)$

37.) For which of the following items would you least expect the law of one price to hold?

- a.) gold
- b.) haircuts
- c.) crude oil
- d.) wheat

38.) Empirical evidence suggests that those countries with the highest inflation rate tend to experience

- a.) the greatest appreciation in their nominal exchange rate
- b.) the greatest depreciation in their nominal exchange rate
- c.) the greatest appreciation in their real exchange rate
- d.) the greatest depreciation in their real exchange rate

39.) How would you characterize the changes that we typically observe in the real exchange rate between two countries on a month-to-month basis?

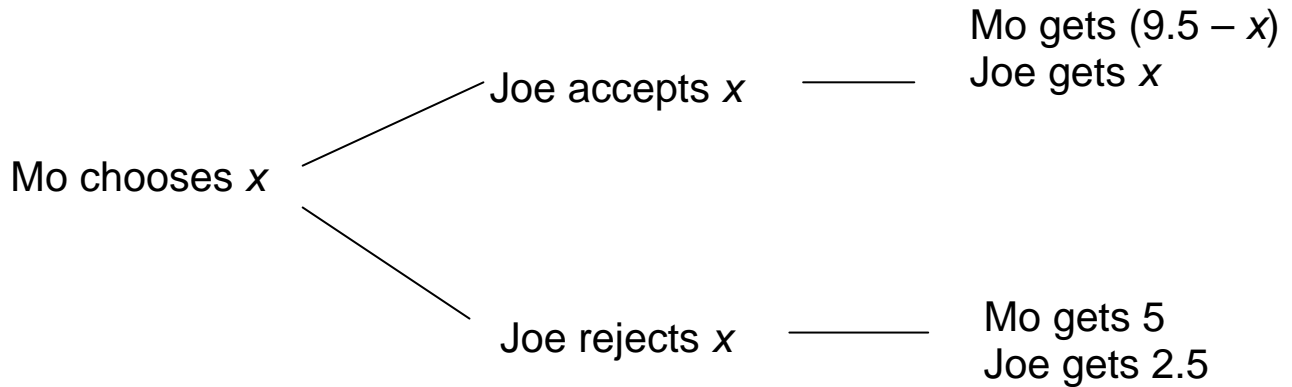
- a.) the changes are primarily caused by differences in inflation rates between the two countries
- b.) the changes are primarily caused by changes in the nominal exchange rate between the two countries
- c.) the changes are primarily caused by changes in the distribution of income between the two countries
- d.) in practice we usually do not observe much change in the real exchange rate on a month-to-month basis because of the law of one price

40.) If you calculate the dollar equivalent of the price you'd pay to buy a Big Mac in McDonald's restaurants in different countries, you find that

- a.) the price is very nearly the same all around the world
- b.) the price occasionally differs by up to 30%, but this difference is usually eliminated by changes in prices or the exchange rate within a few months
- c.) the Big Mac can cost 3 times more in some countries than others
- d.) Big Macs are only sold in the United States, which is one of the reasons that comparing the cost of living across different countries is very hard to do

PART II: FILL IN THE BLANK (50 points total)—credit for correct answer only (no partial credit)

41.) (4 points each, 8 points total) Consider the following decision tree for a sequential game between Mo and Joe in which Mo gets to move first. Mo must pick an integer x between 1 and 5, that is, he chooses either 1,2,3,4, or 5 as the value for x . Next Joe gets to make a decision either to accept or reject the offer. The final payoffs for each are as indicated in the far column. For example, if Mo chooses $x = 5$ and Joe accepts this offer, then Mo gets 4.5 and Joe gets 5.



a.) What value of x does Mo choose in the Nash equilibrium? _____

b.) Suppose we now modify the game so that Joe gets to move first. Joe announces a value for an integer y such that, if x is greater than or equal to y , then Joe will accept the offer of x , but if x is less than y , Joe will reject the offer. Here y must be either 1,2,3,4, or 5. The final payoffs are identical to those for the original game. For example, if Joe announces $y = 4$ and then Mo chooses $x = 5$, then Mo gets 4.5 and Joe gets 5. Assuming that the announcement of y is a binding commitment, what would the value of x be for the Nash equilibrium in this modification of the game?

42.) (3 points each, 12 points total) Consider the following description of the market for good X. The private demand curve is given by $P = 5 - Q$ where P is the price and Q is the quantity. The private marginal cost curve is given by $P = 2 + 2Q$. There is an external benefit of 3 per unit of the good produced.

a.) Calculate the value of the price in the competitive equilibrium _____

b.) What quantity of the good should be produced to achieve the social optimum? _____

c.) Calculate the deadweight social loss associated with the competitive equilibrium _____

d.) Describe a specific policy that would successfully internalize this externality, including the quantitative value for the variable that your policy would involve setting.

43.) (3 points each, 6 points total) A pay-per-view cable TV company is considering offering a particular broadcast. They estimate the willingness-to-pay curve for this broadcast to be given by the formula $P = 24 - 3Q$ where P is the price charged per household and Q is the number of households watching (in millions). Assuming that the marginal cost of providing the show to each household is zero, calculate the value of Q and P that the firm would choose.

price $P =$ _____

quantity $Q =$ _____

44.) (12 points total) Tarzan and Jane are the sole inhabitants of their jungle kingdom. Jane can produce 6 apples or 2 bananas each day while Tarzan can produce 20 apples or 10 bananas each day.

a.) (2 points) Who has the absolute advantage producing bananas? _____

b.) (2 points) Who has the comparative advantage producing bananas? _____

c.) (3 points) What is Jane's opportunity cost of producing 1 banana? _____

d.) (3 points) Suppose that the jungle kingdom can trade apples and bananas with monkeys. The monkeys are willing to trade as many apples or bananas that Tarzan and Jane might like at the relative price of 5 apples for 2 bananas. How many bananas will Tarzan and Jane put together produce in a day in order to take advantage of this opportunity for trade? _____

e.) (2 points) Suppose that Tarzan and Jane were to produce 1 more banana than the level you specified as your answer to question (d). In order to be able to do this, how many fewer apples would Tarzan and Jane need to produce? _____

45.) (2 points each, 12 points total) Let P denote the price and Q the quantity of a particular good. Suppose that a particular country has a domestic demand for this good given by $Q = 40 - 3P$ and has a domestic supply for the good given by $Q = 2P$.

a.) First consider the case of autarky.

i.) What quantity of the good will the country produce under autarky? _____

b.) Now suppose that the country allows free trade of the good, which sells on the world market for the price of 4.

i.) What quantity of the good will the country consume under free trade? _____

ii.) How much of the good will the country import under free trade? _____

c.) Next suppose that the country imposes a tariff of \$1 on each unit that is imported.

i.) What quantity of the good will the country produce domestically under the tariff? _____

ii.) How much of the good will be imported under the tariff? _____

d.) Finally suppose that the country imposes a quota that no more than 10 units of the good can be imported.

i.) What will the price of the good be under the quota? _____