[redacted]

Last modified on Nov 8 at 7 am (4 articles in Question 3 are deleted)

Note: Questions 11 and 12 are moved from Assignment #1
Total: 12 marks (Assignment 2 accounts for 10% of total grade)

Question 1. [Textbook Chapter 10] (1 mark)

Consider the market for gasoline in the country of Independent States. The market for gasoline in this country is currently described by the following demand and supply equations:

Demand: Q = 50,000 – 5000P

Supply: Q = 20,000P

where P is the price per gallon of gasoline and Q is gallons of gasoline. Although the good citizens of Independent States are aware that consuming gasoline creates externality costs on their society the current gasoline market does not incorporate any of these externalities.

a. Describe at least four possible externality costs associated with the consumption of gasoline.

b. Given the externality costs you delineated in (a), where do you think the marginal social cost of gasoline curve is relative to the given supply curve? That is, are the two curves the same, is the marginal social cost of gasoline curve to the right of the market supply curve, or is the marginal social cost of gasoline curve to the left of the market supply curve?

c. Given the above information, what is the current market equilibrium quantity and price?

d. Suppose that the government analyzes the externality costs in this market and concludes that the market should ideally result in 20,000 gallons of gasoline being consumed if all the externalities associated with gasoline consumption were internalized in the market. Assuming the externality costs are per unit of usage of gasoline and are constant, what is the externality cost per gallon of gasoline consumed?

e. Suppose the government elects to impose a tax to internalize the externality. How big an excise tax would the government need to impose in order to address the externality that you measured in (d)?

Question 2. [Textbook Chapter 11] (1 mark)

Consider a community that has two residents, Bob and Mandy. Bob and Mandy would both like to see streetlights installed in their community and they are busy trying to decide what the optimal amount of streetlights for their community is and what price they should each contribute for each streetlight installed. Luckily they are both willing to reveal their preferences and so we do not have to worry about the free rider problem. Bob's demand for streetlights is given by the equation Q = 10 – P and Mandy's demand for streetlights is given by the equation P = 5 – (1/2)Q. The marginal cost of providing a streetlight is $3.

a. On your homework paper draw three graphs vertically one above the other. The first graph should be labeled "Bob's demand"; the second graph should be labeled "Mandy's demand"; and the third graph should be labeled "market demand". On each graph the horizontal axis should be labeled "Quantity of Streetlights" while the vertical axis should be labeled "Price of Streetlights". Now in each graph draw in the demand curve corresponding to your label. Remember that the market demand curve will be a vertical summation of the individual demand curves since a public good is non-rival.

b. Write an equation for the market demand curve for the public good.

c. What is the optimal number of streetlights for this community? Show how you found this number.

d. What price per streetlight will Bob pay? What price per streetlight will Mandy pay? Why do Bob and Mandy pay different amounts for each streetlight that is produced?

Question 3. [Textbook Chapter 10, 11] Reading Assignments (1 mark)

Read through the following articles (You can access them through the library website). Using the concept of voluntary exchange, explain whether or not surrogacy should be allowed or, alternatively, the circumstances under which it should be legal. [Hint: What is the exchange here? Is it voluntary? Is there third party harm?]

- Blackwell, T. "Foreign buyers flocking to Canada to find surrogate mothers after Asian countries crack down," National Post, 2 September 2015
- ~~Guichon, J. "Stop the Infant Merchants," The Globe and Mail 29 August 2001, p. A13.~~
- ~~Priest, L. "Wanted: Canadian Surrogate Mothers," The Globe and Mail 27 August 2001, p. A1.~~
- ~~Sommerville, M. "When Granny Gives Birth to Her Grandson, There's Something Wrong," The Globe and Mail 19 February 2011.~~
- ~~Wente, M. "How to Rent a Womb," The Globe and Mail 18 August 2001, p. A11~~

Question 4. [Textbook Chapter 10, 11] Essay: Medical School Admission (1 mark)

Answer the following question in an argumentative essay. Make sure to proofread for typos and the like; obvious grammatical/spelling errors could lower your grade.
A medical school has received 300 applications from students who want to enroll. The school has the capacity to accept only 120 new students. All the 300 applicants have at least the minimum academic requirements. All have sent cheques for the $6,000.00 tuition fee. Since the number of applicants exceeded the number of slots, there is scarcity and a need to determine which applicants will be admitted and which will not. It is important to recognize that each of these allocation mechanisms, institutions, or governance alternatives will likely result in a different class composition, i.e., a different 120 students granted admission. **Which allocation mechanism do you think is the best? Present your answer in the framework of economics (maximum of 200 words).**

Hint: This is actually a deeper or broader question that asks how we should allocate the talents of the 300 students, between using their time as doctors or in a next best alternative. Would it not be great if the allocation mechanism resulted in their first best choice for their time also being the first best choice for society? Is it really the case that each student's best choice is also the best choice from society's perspective? Or, could private interest and social interest be different? To get a full credit, discuss why allocating school admission seats is different from allocating, say, bananas.

Question 5. [Textbook Chapter 13] Reading Assignments: Modules 34-48 in "Economics of Everyday Life" by Dr. Chris Bruce (1 mark)

a) Read Module 37. One of the ways that governments enforce quotas on fishing is to set what used to be called "transferable quotas" and are now more commonly known as "catch limits." Once the government determines what the maximum catch will be, that catch size is divided among the existing fishermen, as individual quotas or catch limits. Each fisherman has the right to use his quota or to sell it so someone else. How will this system work? Explain in 2-5 lines. Briefly discuss what its drawbacks are and what its benefits and costs might be.
b) Read Modules 34-48. Chapter 7 of the textbook concludes that the equilibrium of supply and demand in a market maximizes the total benefits received by buyers and sellers. What are the strong assumptions behind this demand and supply model? List at least two.
c) Read Modules 34-48. When does a market-based economy fail and why? Explain in 3-5 lines.

Question 6. [Textbook Chapter 13] (1 mark)

The price of labor (L) is $2 per unit of labor and the price of capital (K) is $5 per unit of capital. Given this information, complete the table below. After completing the table, fill in the blank questions to define each concept.

Labor (L)	Capital (K)	Output (Q)	Marginal Product of Labor (MPl)	Variable Cost (VC)	Fixed Cost (FC)	Total Cost (TC)	Average Variable Cost (AVC)	Average Fixed Cost (AFC)	Average Total Cost (ATC)	Marginal Cost (MC)
0	10	0	---------				--------	--------	----------	----------
1	10	50								
2	10	70								
3	10	80								
4	10	88								
5	10	90								

a. ATC = _____/_____

b. ATC = _____ + _____

c. MC = _____ /_____

d. VC = _____*_____

e. VC/(price of labor) = _____

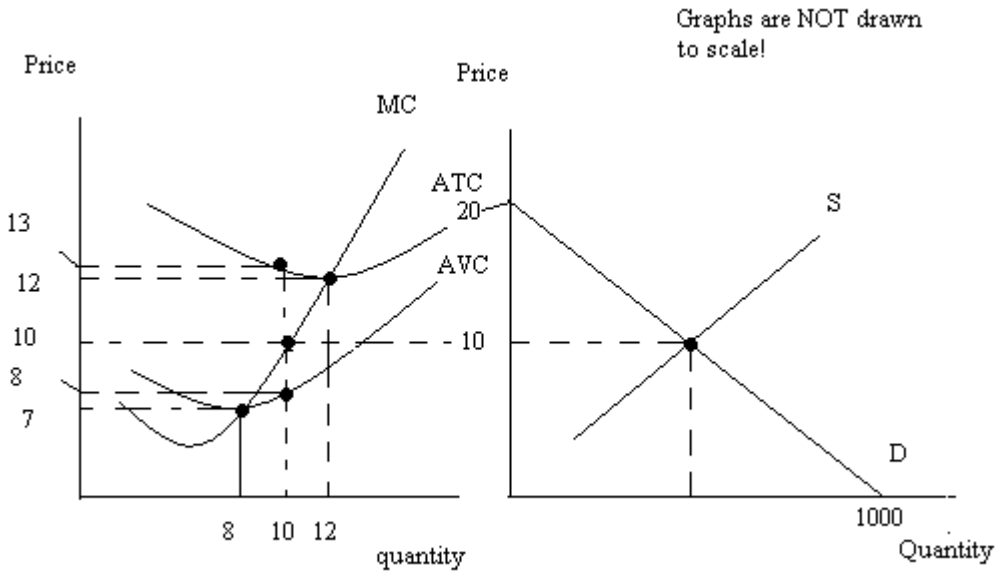
f. TC = _____*_____

g. AFC = _____ - _____

h. MPl = _____/_____

Question 7. [Textbook Chapter 14] (1 mark)

Use the graphs below to answer this question. The graph on the left represents a typical firm in this industry, and the graph on the right represents the entire industry. Assume all firms are identical. Also assume that the market is perfectly competitive.



a. Given the above graphs, is this a short-run or long-run equilibrium? Explain your answer.

b. Given the above graphs, what is fixed cost equal to for a representative firm?

c. In the short-run how many units of the good does a representative firm produce?

d. Given the above graphs, in the short-run what is the equilibrium market quantity?

e. Given the above graphs, how many firms are currently in the market?

f. Given the above graphs, what do you predict will happen in this industry in the long run?

g. Holding everything else constant, how many firms will be in the industry in the long run? (Hint: partial firms are okay for your answer here.)

Question 8. [Textbook Chapter 13, 14] (1 mark)

The profit maximization rule for a perfectly competitive firm says that the perfectly competitive firm will maximize its profits when it produces the quantity where marginal revenue equals marginal cost for the last unit produced. **In your own words**, explain why the profit-maximizing firm should produce the quantity where MR = MC rather than that quantity where MR > MC or the quantity where MR < MC.

Question 9. [Textbook Chapter 15] (1 mark)

Suppose the market demand curve for a monopolist is given as $P = 200 – 2Q$. Furthermore, suppose the MC curve for the firm can be written as $MC = 20 + 2Q$. The firm's TC can be expressed as $TC = 20Q + Q^2 + 100$. Use this information to answer this set of questions.

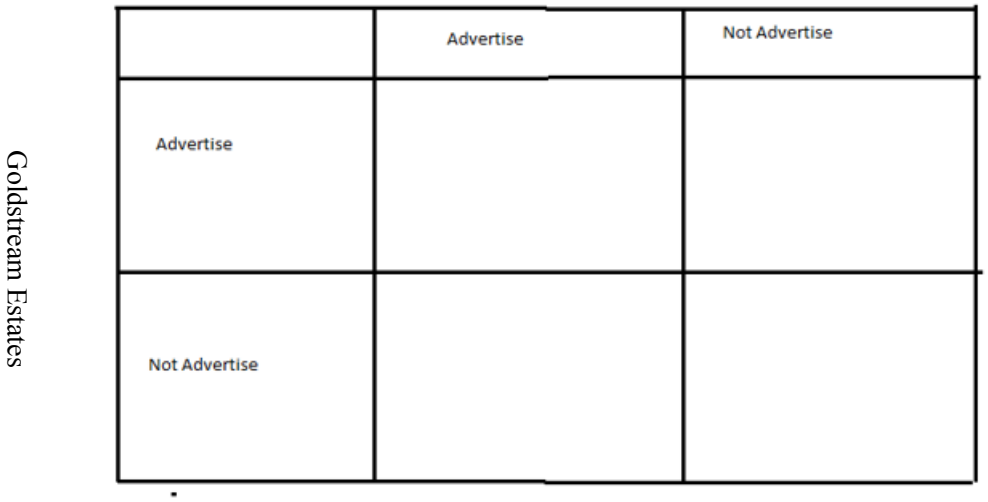
a. What is the profit maximizing price and quantity for this monopolist given the above information? Calculate the monopolist's profit.
b. Calculate the monopolist's consumer surplus (CS), producer surplus (PS), and deadweight loss (DWL).
c. Suppose demand increases by 90 units at every price. Find the equation for the monopolist's new demand curve. Then, calculate the new profit maximizing price and quantity for this monopolist given the new demand curve. Calculate the new level of monopoly profits.
d. Calculate the value of consumer surplus (CS'), producer surplus (PS'), and deadweight loss (DWL') for this monopolist given the information in (c).

Question 10. [Textbook Chapter 17] (1 mark)

Suppose there are two companies, Goldstream Estates and Red Deer Realtors, in a market that compete with one another. Both firms are trying to decide independently of one another whether they should engage in an advertising campaign or not. If Goldstream Estates advertises while Red Deer Realtors does not advertise, Goldstream Estates will earn profits of $1000 while Red Deer Realtors will earn profits of $0. If Goldstream Estates advertises and Red Deer Realtors also advertises, each firm will earn $500 in profits. The payoffs for advertising or not advertising for Red Deer Realtors are symmetric to those facing Goldstream Estates. Finally you know that when both firms decide not to advertise they each earn $700 in profits. Use this information to complete the payoff matrix below.

a. Complete the above matrix given the information provided in this question.
b. If Red Deer Realtors and Goldstream Estates cooperate with one another, which choice of strategy for each firm will result in the greatest joint profits?
c. What is the dominant strategy for Goldstream Estates?
d. What is the dominant strategy for Red Deer Realtors?
e. What do you predict will be the outcome of this "game" given the above information? What will the value of joint profits be given this predicted outcome?

Red Deer Realtors



Question 11. [Textbook Chapter 18] Factor Markets (1 mark)

The following table gives cost information for each firm in the digital camera industry. Assume that this industry is characterized by perfect competition in both the input and the output markets: that is, all firms in the digital camera industry are price-takers both in the factor (labor and capital) and product (digital camera) markets. Assume that capital is paid a constant price of $80 per unit. Suppose that in the long-run equilibrium the market price of a digital camera is $10. Assume that all firms in this industry are identical and face the same cost curves.

a) Given the above information, what is the equation for marginal revenue (MR) for a representative firm in the long-run?

The market supply curve for labor is $Q_L = P_L$, i.e., when the wage is P_L, the total number of willing workers is: $Q_L = P_L$. The market demand curve for labor is $Q_L = 60\text{-}P_L$, i.e., when the wage is P_L, there is a total of $(60 - P_L)$ workers hired by the digital camera firms.

b) What is the equilibrium wage per unit of labor (P_L)? In equilibrium how many workers (labor) are working in this industry (Q_L)? Use this information to complete the VC column in the table below.

Note: L is labor; K is capital; Q is output; TR is Total Revenue.
MPL = ΔQ/ΔL = Marginal Product of Labor, i.e., the additional output generated by employing one more unit of labor.
VMPL(or MRP Marginal Revenue Product) = $\Delta TR/\Delta L = (\Delta TR/\Delta Q)\times(\Delta Q/\Delta L)$ = **MR×MPL**= value of the marginal product of labor, i.e., the value of the additional ouput generated by employing one more unit of labor.
MC = ΔTC/ΔQ = ΔVC/ΔQ
MFC = ΔTC/ΔL = Marginal Factor Cost (of labor) holding other factors constant.

c) Complete the following table.

L	K	Q	MPL	TR	VMP L	VC	FC	TC	MFC	Profit = TR – TC
0	1	0	---	0	---	0		80	---	-80
1	1	1								
2	1	5	4							
3	1	15								
4	1	20								
5	1	23								
6	1	24								

d) How many units of labor will make VMPL = MFC for a representative firm? Is the profit maximized at this level of labor usage? How many units of labor will one firm hire?

e) Now suppose the government makes it legal for firms to hire illegal immigrants. This results in a new market labor supply curve: $Q_L = 40 + P_L$. The market demand curve for labor is not changed ($Q_L = 60 - P_L$). What is the new equilibrium market wage per unit of labor? What is the new MFC for a representative firm? Suppose the demand and supply curves for digital cameras are not changed in the short run, i.e., the market price of the digital camera isstill
$10. Without writing another table, do you know how many units of labor one firm will hire?

Question 12. Inequality (1 mark)

Part I: Lorenz-Curve and Gini Coefficient (0.5 mark)

Consider the following (very roughly measured) distribution of income in the economy,

Share of Households	Cumulative Share of Income
0	0
½	¼
1	1

Thus, the distribution function says that the lower half of the households earns one fourth of the total income in the society.

1. Draw the Lorenz-curve for the economy.
2. Calculate the Gini-coefficient.

Part II: Redistributing Income (0.5 mark)

Suppose that in an economy composed of three people we can measure each person's utility cardinally. Suppose, too, that we can use three possible institutions — A, B, and C— to organize economic activity in this economy. The problem is to choose one of the three institutions. The utility of each person under each institution is given below.

Institution	Person 1's utility	Person 2's utility	Person 3's utility
A	45	45	45
B	75	60	30
C	78	63	21

1. According to Rawls's difference principle, which institution is preferred?
2. Suppose that you would be one of the three people in this economy, but you don't know which one. Which institution would you choose? If each person maximizes expected utility and if each attaches probability 1/3 to being any one person, which is the preferred institution?
3. Now suppose that each of the three does know which person he or she will be. If the institution is chosen by majority rule, which one will be chosen by self-interested individuals?