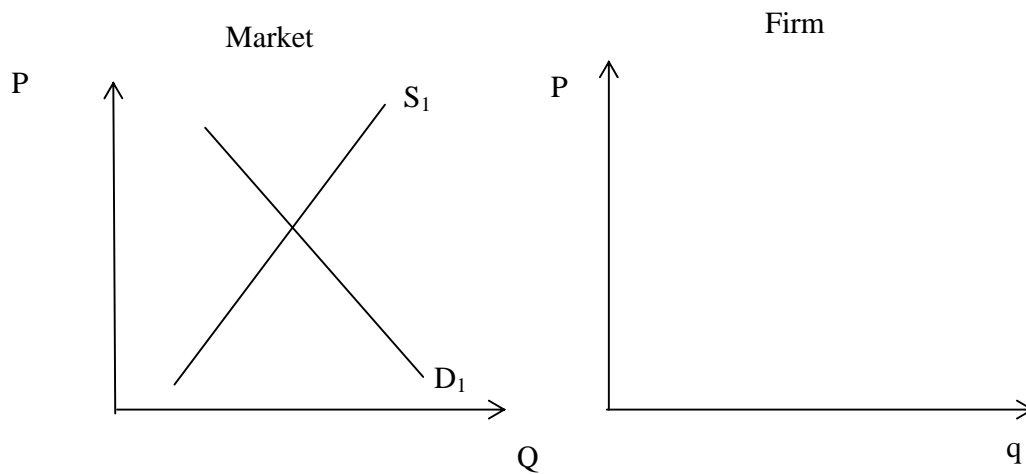


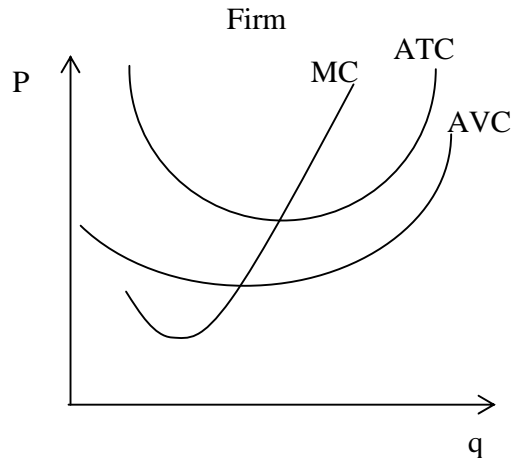
**Assignment #8**  
**(The last assignment)**  
Economics 101 – Section 5  
Due Date: Thursday April 22, 2004

Instructions: Complete all questions and sub questions. You may answer on the assignment sheet and use additional paper if necessary. Make sure to include your name (first and last) and your student number on the first page of your assignment. Staple all sheets together and turn in following lecture or to my office in the folder outside my door by the due date.

1) The following figure represents the market demand and supply for wheat. Draw the demand and marginal revenue curve facing a perfectly competitive firm and label these curves appropriately.

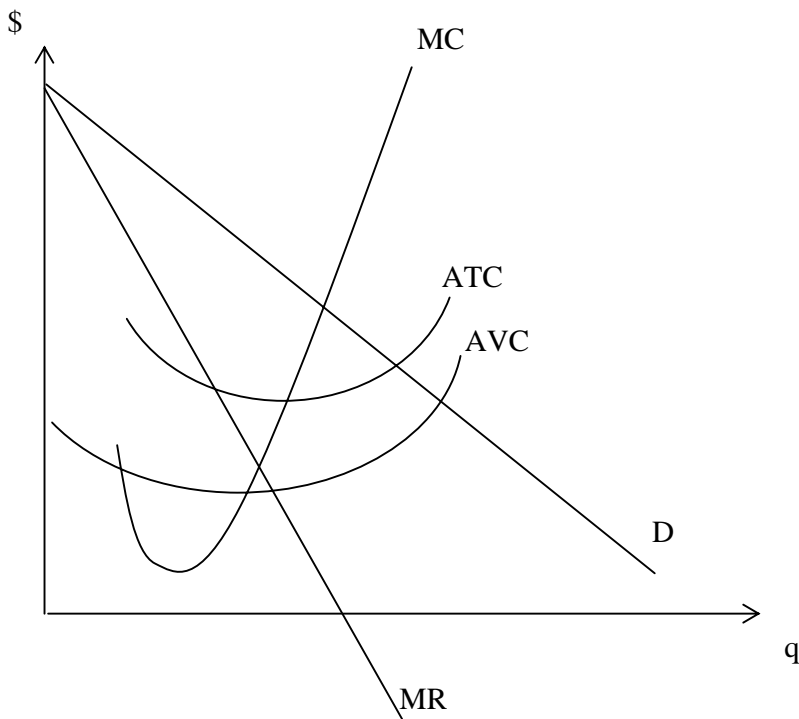


On the following graph, draw in the firm's supply curve.



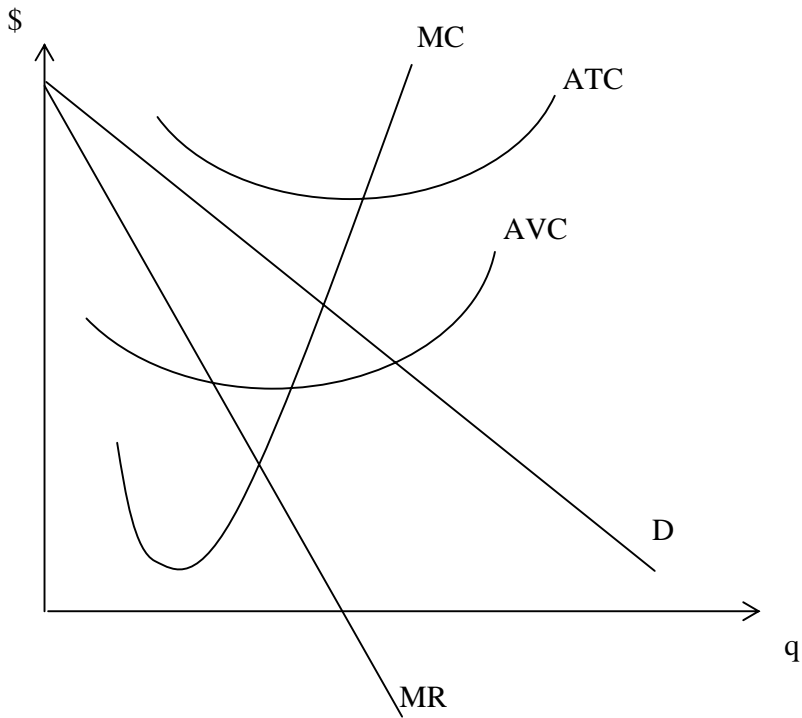
2) Consider the market for homecare in Ames. This market is characterized by monopolistic competition since there are many providers but each provider's service is unique as compared to the other providers. The following two figures indicate the demand curve (D), marginal revenue curve (MR), average total cost curve (ATC), and average variable cost curve (AVC) for a particular firm – “Old People R US” under different cost structures.

i) With the following cost structure (i.e. with the given ATC and AVC curves) indicate how much the managers at “Old People R US” should produce ( $q^*$ ), the price they will charge ( $p^*$ ), and the amount of profit they will receive (shade in the appropriate area for profit) in the short-run if their goal is to maximize profit.



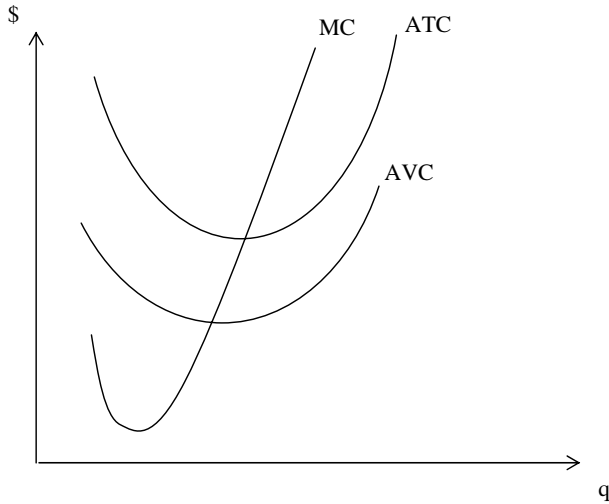
ii) Will more firms want to enter or exit this market in the long run and why?

iii) With the following cost structure (i.e. with the given ATC and AVC curves) indicate how much the managers at “Old People R US” should produce ( $q^*$ ), the price they will charge ( $p^*$ ), and the amount of profit they will receive (shade in the appropriate area for profit) in the short-run if their goal is to maximize profit.



iv) Will more firms enter or exit the market in the long-run and why?

3) In class we have typically used “U” shaped ATC and AVC curves to represent a firm’s average total and average variable costs respectively. The marginal cost curve was always shown to intersect these two curves at their minimum points. These curves are shown in the figure below. Explain why if  $MC < ATC$  then ATC is falling (decreasing) and when  $MC > ATC$  then ATC is rising. Explain why this relationship also holds true for the MC and AVC. Give an intuitive answer which could be explained to someone who has never taken an economics course.



4) The international market for passenger airlines is dominated by two companies – Boeing in the US and Airbus in Europe. Each firm is faced with two choices: 1) invest in a new airliner and new technology, and 2) don't invest in new technology and produce only existing aircraft models. The development of a new aircraft is very costly and if both companies were to invest then it is quite possible both firms may experience lower profits than before the new investment since the market for new aircraft is limited. However, if only one firm invests there is a chance that they could capture a significant portion of the market and earn a large profit. The analysts for both firms have estimated the profits for each company under different scenarios and have come up with the following payoff matrix where the entries are profits for the two firms in millions of dollars (Boeing Profit, Airbus Profit):

		Airbus	
		Don't Invest	Invest
Boeing	Don't Invest	(11,8)	(1,15)
	Invest	(13,2)	(4,3)

i) What is the best response for Boeing if:

a) Airbus does not invest?

b) Airbus does invest?

ii) What is the best response for Airbus if:

a) Boeing does not invest?

b) Boeing does invest?

iii) What, if any, is the dominant strategy for Airbus?

iv) What, if any, is the dominant strategy for Boeing?

v) If this was a one time game, that is if Boeing and Airbus only had one choice to make this decision, what would the outcome be and how much profit would each company make?

5) Suppose the local market for cellular phones is dominated by two companies – Sprint and Verizon. Each of these companies knows that their actions will affect those of the other company. The managers of each company knows they must consider how the other firm will react when making their decisions. The particular problem we want to look at here concerns the issue of advertising and product promotion. There are three advertising strategies that each of these firms can adopt: 1) lax – not very aggressive, 2) normal – business as usual scenario, or 3) aggressive – a very strong advertising campaign aimed at stealing business from the other firm. Before deciding on their actions the managers for each firm hires a team of accountants and market analysts to determine what the profit for each firm will be under the different scenarios. Both teams of analysts come up with the same set of answers and these are shown in the following payoff matrix.

		Sprint		
		Lax	Normal	Aggressive
Verizon	Lax	(10,10)	(8,13)	(1,20)
	Normal	(12,9)	(10,10)	(9,12)
	Aggressive	(20,1)	(13,8)	(-5,-5)

The profits in each cell are in millions of dollars where (Verizon Profit, Sprint Profit) (i.e. if Verizon adopts an aggressive program and Sprint is lax then Verizon will have a profit of 20 million and Sprint will have a profit of 1 million).

i) What is Verizons best response and profit if (also, indicate the profit for Sprint):

- a) Sprint chooses lax?
  
- b) Sprint chooses normal?
  
- c) Sprint chooses aggressive?

ii) What is Sprints best response and profit if (also, indicate the profit for Verizon):

- a) Verizon chooses lax?
  
- b) Verizon chooses normal?
  
- c) Verizon chooses aggressive?

iii) A Nash equilibrium is a point where once the firms have made their decision there would be no incentive to adopt another strategy. In this particular problem there are two such Nash equilibriums. One point is where Verizon is aggressive and Sprint is normal. Convince yourself that when Verizon is aggressive making \$13 million and when Sprint adopts a normal advertising strategy making \$8 million that there is no incentive for either cellular company to change their strategy. Once you have done so find the second Nash equilibrium and indicate what the level of profit would be for each firm.

vi) In this example neither firm has a dominant strategy. Explain why by indicating that the choices taken by the firms will depend on the actions of the other firm.