Recitation #10 – Week 04/05/2009 to 04/15/2009

Chapter 13 – Perfect Competition

1. The model of perfect competition is based on two necessary conditions and a third condition that is often present as well. Identify each of these conditions and then briefly discuss their importance in the model.

2. The table below provides information about Sarah's Doughnut Shoppe, a small firm operating in a perfectly competitive industry. Use this information to answer this set of questions.

Quantity of doughnuts	Total revenue	Total cost	Profit
100	$ 200	$250	
200	400	360	
300	600	530	
400	800	725	
500	1,000	950	

a. What is the market price for a doughnut?

b. Fill in the profit column of the table. At what level of output does Sarah's Doughnut Shoppe maximize its profits?

c. Calculate Sarah's Doughnut Shoppe's marginal cost and marginal revenue for each level of output. Use the table below to organize your results.

Quantity of doughnuts	Total revenue	Total cost	Marginal cost	Marginal revenue	Profit
100	$ 200	$250			
200	400	360			
300	600	530			
400	800	725			
500	1,000	950			

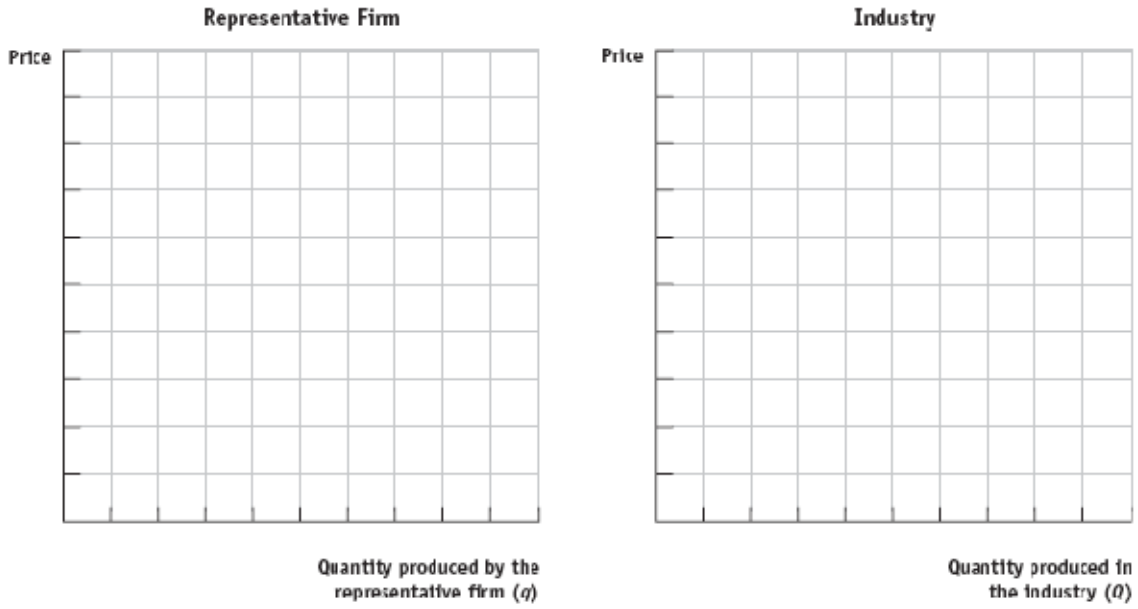
d. What is the relationship between marginal revenue and marginal cost at the profit maximizing level of output for Sarah's Doughnut Shoppe? Explain the meaning of this relationship and how it relates to profitability.

6. The market for books is perfectly competitive and a constant-cost industry. The short-run industry supply curve is given by the equation $P = 4 + Q$, while the industry demand curve is given by the equation $P = 100 - Q$, where P is the market price and Q is the market quantity. The representative firm's MC curve can be written as $MC = 4 + 2q$, and its TC is given by the equation $TC = 36 + 4q + q2$, where q is the quantity produced by the firm.

a. What is the equilibrium price and the equilibrium market quantity for this good in the short run?

b. Given the market price you calculated in part (a), what is the profit-maximizing quantity, *q*, for a representative firm to produce in the short run? What rule did you use to calculate this profit-maximizing level of output?

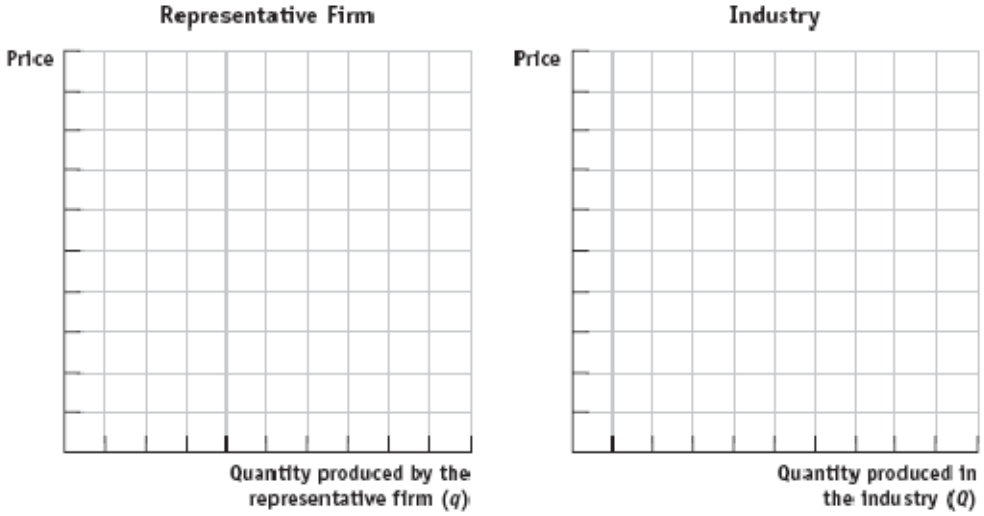
c. Is this firm making positive, negative, or zero economic profit in the short run? Sketch a diagram of the market and the representative firm. In these diagrams identify the equilibrium price, the market quantity, the firm quantity, the firm's *ATC* curve (a sketch of this is fine), the firm's *MC* curve, and the firm's profits, if there are any.



d. If all the firms are identical in this industry, how many firms are in the industry in the short run?

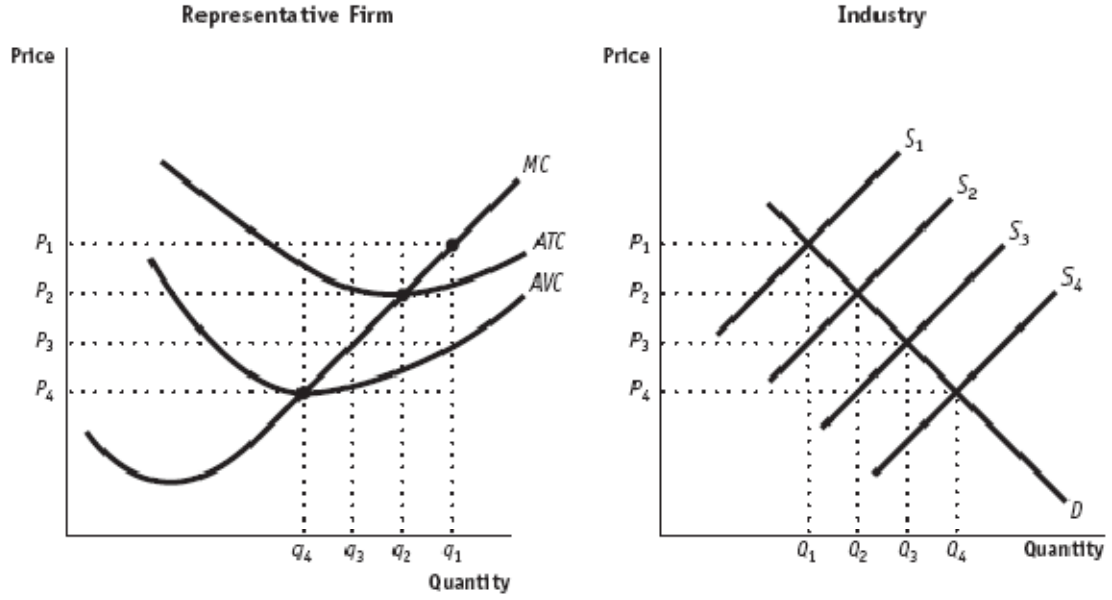
e. What is the long-run price, the long-run market quantity, the long-run quantity produced by a representative firm, and the long-run number of firms in the industry?

f. Draw a sketch illustrating the long-run equilibrium for this industry and for a representative firm.



Additional exercise (for practice)

Use the graphs below of a perfectly competitive market in a constant-cost industry to answer this set of questions.



a. Suppose in the short run the industry supply curve is given by *S*1. Identify the shortrun equilibrium market price and quantity, the quantity produced by the representative firm, and whether the firm is making positive, negative, or zero economic profits. Holding everything else constant, what will happen in the long run in this industry? In your answer to this question, identify the long-run equilibrium price and quantity in the industry, the quantity produced by the firm in the long run, and the level of profits for the firm in the long run.

b. Suppose in the short run the industry supply curve is given by *S*4. Identify the shortrun equilibrium market price and quantity, the quantity produced by the representative firm, and whether the firm is making positive, negative, or zero economic profits. Do you know with certainty what this firm's profits equal in the short run? Holding everything else constant, what will happen in the long run in this industry? In your answer to this question, identify the long-run equilibrium price and quantity in the industry, the quantity produced by the firm in the long run, and the level of profits for the firm in the long run.

c. You are told that this representative firm is currently making negative economic profits in the short run, but that it is covering all of its variable costs of production and some of its fixed costs. Given the price choices in the above graph, what is the current price for this good? In the long run will there be entry of new firms into the industry or will existing firms exit the industry? Explain your answer.