Economics 301  
Spring 2005  
Problem set # 8

Name: ____________________________________________  

1. Suppose a perfectly competitive firm has the short-run cost function $C(q) = 125 + q^2$. Use the derivative formula or marginal cost to determine the firm’s output level and profit at prices of $30$ and $20$. At what price does the firm reach the shut-down point?  

2. If each competitive firm in an industry has the short-run cost function $C(q) = 50 + 5q + q^2$, and the market price is $35$, what is the profit-maximizing output level for each firm? What is the total revenue? What are the profits?  

3. Suppose that the average variable cost of a competitive firm is given by $AVC(q) = 3 + q$, the marginal cost is $MC(q) = 3 + 2q$ and the firm’s fixed costs are known to be $3$. Will the firm be earning a positive, negative or zero profit in the short run when the market price is $9$?  

4. Draw a graph showing the average total, average variable, and marginal cost curves for a typical firm. Draw in three prices that result in the firm making positive profits, breaking even, and making negative profits that are less than fixed costs.  

5. Demand in Market 1 for $X$ is $Q_d = 80 - p$. Demand in Market 2 is $Q_d = 120 - 2p$. At a price of $20$, which has a larger consumer surplus?
6. True or false, explain your answer. “Producer surplus and profits are always equal, since they mean the same thing.”

7. Perloff, Third edition, question 1 page 268

8. Perloff, Third edition, problem 18 page 310