EC 11. Homework #3

1. Explain the following terms:
   (a) Profit Function. (10)
   (b) Firm Supply Curve. (10)
   (c) Marginal Product of Labor (10)
   (d) Producer Surplus. (10)

2. Consider a consumer with the following utility function, $u(x, y) = x^2 + y^2$.
   (a) Graph the consumer’s indifference curves, for $u = 1$ and $u = 2$. (5)
   (b) Use a graph to illustrate the consumer’s budget and her optimum choice when prices are $p_x$ and $p_y$ with $p_x < p_y$, and her income is $I$. Hint, look at your graph and think before grinding through any math! (10)
   (c) What is the demand curve for $x$ as a function of $p_x$, $p_y$, and $I$? (20)
   (d) Why is the analysis in this case different from the analysis in last week’s homework Question 3? (5)

3. Suppose that demand for beaded seat covers – the kind used by cab drivers – is given by the following equation: $5P = 8000 - Q$
   Suppose further that the cost of building a plant to make seat covers equals $200 and that the variable cost to produce $q$ seat cover equals $2q^2$
   (a) What is the supply curve of an individual firm producing a seat covers? (10)
   (b) Suppose that there is currently 8 firms operating in this industry. What is the industry supply curve? (10)
   (c) With 8 firms, what is the market equilibrium price and quantity? (10)
   (d) What is the total cost and the average total cost function of producing a seat cover? (10)
   (e) What quantity minimizes average total cost for a firm? (10)
   (f) If the industry is competitive, what is the long run equilibrium price? How many firms are in the industry? (10)

   Bonus Question: Explain the “Brittney Spears Paradox,” i.e. how can her CD’s sell for a positive price. (10)