

Below are five long review questions. The exam questions will look similar though not always obviously so. We will go over the answers on Thursday May 5, 2005 at 4pm in our regular class room. See you then.

1. You currently have a budget of \$20/week. You love to drink Coke. The least expensive 2 liter bottles you have found are at Winn Dixie and cost \$0.90.
  - a. Draw your budget constraint placing Coke on the x-axis and All Other Goods on the y-axis. Be sure to label where the budget constraint intersects the y and x-axis.
  - b. Reading the Advertiser, you find a coupon. It states: For every 2 liter bought at regular price you get the next 2 liter at \$0.30 off (Limit 10 total). Draw your new budget constraint. Be sure to label where the budget constraint intersects the y and x-axis and other important points.
  - c. When you go to Winn Dixie they tell you that they double all coupon offers, so that now the second 2 liter is \$0.60 off. Draw the final budget constraint. (The Limit 10 is still in effect). Be sure to label where the budget constraint intersects the y and x-axis and other important points.
2. You are the owner of a semiconductor firm. Your firm is in a perfectly competitive (Price = Marginal Cost) market. You have customers all over the world. Your current method of production results in a marginal cost curve that is the following:  $MC_A = \$0.05 \cdot Q_A$  (where Q is the number of semiconductors).
  - a. If the market price for a semiconductor is \$50, how many do you produce?  
 **$1000 = Q_A$**

Your engineers develop a new method for producing semiconductors. The marginal cost of this method is  $MC_B = 1 + .01Q_B$ .

- b. If you need to produce 20,000 semiconductors and can use both methods to achieve your goal, how many will you produce with this new method in order to minimize marginal cost?  
 **$Q_B = 16,650$**
  - c. How many tons will produce using the old method?  
 **$Q_A = 3,350$**
  - d. What is the marginal cost of producing the last unit?  
 **$MC_A = MC_B = \$167.5$**
  - e. What the firms profit?  
**Profit = \$1,666,674.5 (some rounding involved)**
3. Suppose that your production process takes the following form:  $Q = 8KL$ . In the short run your capital is fixed at 10 units and each unit costs you \$20/per hour to operate. You pay your employees the market wage of \$10 per hour for each hour they work. There is no overtime pay.
  - a. Find the Total Cost Equation. Be sure to label the fixed cost and variable cost portion of the equation.  
 **$TC = .125Q + 200$**
  - b. What is the slope of the total cost equation?  
**.125**
  - c. On one graph, draw and label the
    - i. Fixed Cost Curve,
    - ii. Variable Cost Curve and the
    - iii. Total Cost Curve. Be sure to label the slope and intercept of each curve.
  - d. What is the Marginal Cost of Production? **.125**
  - e. What is the Average Cost of Production?  **$ATC = .125 + 200/Q$**
  - f. On a single graph, draw the
    - iv. Marginal Cost Curve
    - v. Average Variable Cost Curve
    - vi. Average Fixed Cost Curve
    - vii. Average Total Cost Curve. Be sure to label two point on each curve.

4. Answer the following questions using the information below. Suppose there are **40** identical firms in a competitive industry. Each have a short run marginal cost curve equal to:

$$SMC = \frac{1}{4}q + 10$$

The market demand is:

$$P = 80 - \frac{1}{200}Q$$

- What is the market supply equation?  **$P=10 + Q/160$**
- What is the equilibrium quantity supplied and demanded in the market? **6222.2**
- What is the equilibrium price in the market?  **$P=48.89$**
- What is the total revenue in the market? **\$304,203.36**
- What is Consumer Surplus?  **$CS = \$96,786.32$**
- What is Producer Surplus?  **$PS = \$120,990.68$**
- How many units does a single firm produce? **175.55**
- What is the total cost for one of these firms? **4580.32**

5. Using the following information about Profits-R-Us Monopoly to help maximize profits.

Profits-R-Us face a demand curve:

$$P = 600 - \frac{1}{8}Q$$

(Slightly more difficult) The marginal cost for Profits-R-Us Marbles is:

$$MC = \frac{3}{8}Q + 50$$

- Write out the profit maximizing equation. **Max profit =  $TR-TC = (600+(1/8)Q)*Q - TC$**
- Write out the total revenue equation.  **$TR = (600+(1/8)Q)*Q$**
- What is the decision rule for a monopolist?  **$MR=MC= 600-(2/8)Q = (3/8)Q+50$**
- What is Profits-R-Us Marginal Revenue?  **$MR= 600-(2/8)Q$**
- What is the profit maximizing number of marbles for Profits-R-Us? **880**
- What is the profit maximizing price of marbles for Profits-R-Us? **\$490**
- What is Producer Surplus? (Be Careful). **\$242,000**
- Suppose Profits-R-Us find a way to produce their marbles at zero cost each. What is the new profit maximizing quantity? **2400**
- What is the new profit maximizing price? **300**