1. (8 points) A multiple-plant monopolist produces the same product in two different production plants. The cost of producing in plant one is given by \( C_1(Q_1) = 90 + 70Q_1 + .03Q_1^2 \), where \( Q_1 \) is the quantity produced in plant one; and the cost of producing in plant two is given by \( C_2(Q_2) = 110 + 80Q_2 + .04Q_2^2 \), where \( Q_2 \) is the quantity produced in plant two. The demand function for the good is given by \( Q = 2000 - 10P \), where \( P \) is the price and \( Q \) is the amount demanded in total (regardless of where the good was produced). Assuming profit is maximized, how much should be produced in each of the two plants and what price should be charged? Show your work.

2. (4 points) Suppose a monopolist can separate buyers into two identifiable groups and practice price discrimination. Carefully explain why the monopolist would want to charge a higher price to the group with the more inelastic demand.

3. a. (5 points) For monopoly, marginal revenue is less than price. Explain in two different ways why this relationship holds.

   b. (3 points) If demand is inelastic, will marginal revenue be positive or negative. Carefully explain your answer.

4. (10 points) Using words and graphs, compare and contrast the effects of imposing a price ceiling in a competitive market with the effects of imposing a price ceiling on a monopoly. (You may assume that price is set at a level below the market-clearing price in competition and that it is set where price equals marginal cost in monopoly.) Explain thoroughly.

5. (8 points) Write three paragraphs and draw appropriate graphs to discuss the effects of imposing a per-unit excise tax, collected from producers in a competitive market. In the first paragraph carefully explain how the excise tax changes the supply curve and leads to a difference between the price buyers pay and the price that sellers ultimately receive. In the second paragraph explain why the price (to buyers) goes up by less than the amount of the tax. In the third paragraph, explain why the excise tax leads to an inefficient outcome.

6. (6 points) Using words and graphs, discuss the economic effects of imposing an import quota. What assumptions have you made in your analysis?

7. (6 points) Using words and graphs, discuss the economic effects of a price support program (where the government promises to buy up any unsold output). Is a deadweight loss created? Why or why not?