FE431: PUBLIC FINANCE
Fall 2006 – Professor Schmitt
Homework 2 – due September 6th

1. Chapter 3 Questions and Problems #2 page 74.

2. Chapter 3 Questions and Problems #5 page 75.

3. Chapter 3 Questions and Problems #7 page 75.

4. Jim receives $20 each week and purchases only two goods, milk and chocolate. His preferences for the two goods can be described by the utility function $U^{JIM} = CM + M$, where *M* is the amount of milk he consumes (in gallons) and *C* is the amount of chocolate he consumes (in pounds). If milk costs $2 per gallon and chocolate costs $4 per pound, what combination of milk and chocolate should Joe purchase to maximize his utility? Keep in mind that Jim can purchase partial units as well. Hint: Best solved using calculus.

5. Suppose an economy consists of two people, Tom and Mary. Only two goods exist in the economy, steak and eggs. Tom likes both steak and eggs. His utility function over the two goods is $U^{Tom} = S + 2E$, where *"S"* is the number of steaks Tom has and *"E"* is the number of eggs. Mary, on the other hand, likes steak but does not like eggs. Mary's utility is given by the function $U^{Mary} = S - E$.

    a. Use **two different** indifference curve diagrams to illustrate Tom and Mary's preferences over steak and eggs. Put steak on the y-axis and eggs on the x-axis. For each person, indicate two different consumption bundles that lie on an indifference curve representing *U=20*. Also, be sure to indicate the direction of increasing utility for both individuals. What can you say about Tom's MRS_{SE}? What about Mary's MRS_{SE}?

    b. Now illustrate their preferences using an Edgeworth Box diagram. Make the origin for Mary be the lower left corner of the box (again, with steak on the y-axis and eggs on the x-axis). Assume the total endowment of the two goods is 20 steaks and 20 eggs, and suppose Mary is initially endowed with 5 steaks and 10 eggs and Tom is endowed with 15 steaks and 10 eggs. Indicate both the initial endowment and the area in which Pareto Improvements exist.

    c. Now show the **entire** contract curve in the Edgeworth Box. Briefly explain what the contract curve looks like.

6. What part of the condition for Pareto Efficiency will be violated if a market is served by a monopoly rather than by many perfectly competitive firms? Explain. [Hint: Think about the steps we used to show that a perfectly competitive industry will generate a Pareto Efficient outcome. Which of the outcomes will be different under a monopoly? Will too much of the good be produced, or too little? Will the good be exchanged efficiently? Why, or why not?]