Wilf Csaplar Jr.   Economics 477   Homework #4   Due 9/23
The Last One!
Place your name on the back of this sheet of paper and nowhere else. Staple your answers on the front of this sheet of paper. Failure to follow these directions will cost you 1 point. If you use double-sided printing or print on the back of scrap paper, I will give you one additional point.

Show all work on all questions and <u>briefly</u> explain what you did.

1) (35 points) Suppose you are buying furniture for a large room. Desks (D) cost $300/desk. Chairs (C) cost $100/chair and bookcases (B) cost $150/bookcase. Your budget is $4500. A desk uses up 15 square feet. A chair takes up 5 square feet. A bookcase takes up 7½ square feet. You have 225 square feet of usable space. (The rest of the space is for moving around.) Your utility function is given by $U(B, C, D) = 9B^{1/3}C^{1/3}D^{1/3}$. Set up the Lagrangian and use it to find the optimal number of bookcases, chairs, and desks.

2A) (25 points) Suppose the interest rate is 10%, your income this year is $400, your income next year will be $550, and your assets are $100. If your utility function is given by $U(C_0, C_1) = C_0^{1/3}C_1^{1/3}$, then find your optimal consumption during the two periods.
B) (5 points) What is the relative price of consumption this year? Explain your logic.

3) (35 points) Suppose your utility function for dinner (D), movie (M) , and gasoline (G) is given by $U(D, G, M) = 4D^{1/2}M^{1/4}G^{1/4}$. (Ignore that this is not a valid utility function.) Suppose that dinner costs $20/meal and lasts 3 hours. Movies cost $10/movie and lasts 1.5 hours. Gasoline costs $5/gallon. If your income is $100 and you have 13.5 hours, how much of each should you buy?