EC 3204 Homework 2: Intro to Consumer Theory

Due 10/01

1. Suppose that your utility from the consumption of Coke and Pepsi can be expressed as:

# U(C,P) = 2C2P

Where P is the number of units of Pepsi consumed and C is the number of units of Coke consumed.

a. Draw indifference curves for **U = 100** and **U = 1000**.

b. If you have **$100** to spend on these two goods, and **C units cost $2** each and **P units cost $1.5** each, draw your budget constraint below.

c. Calculate the **utility maximizing** quantities of Coke and Pepsi for you under these circumstances. Show this solution in your diagram above. What is the marginal utility of food at this point? The marginal utility of clothing? The consumer’s total utility?

d. Suppose a price war drives the price of Pepsi down to $1. Calculate the impact of this event on the utility maximizing quantities of Coke and Pepsi for you. Show this new solution in your diagram. What happens to your total utility? Why?

e. Suppose that the federal government decides to take away from your income enough to return you to your old ***utility*** level. How much money would they have to take away? Explain your answer carefully and think about the impact of the price change on your choices.

1. Suppose that a typical poor family spends **$5040** on either heating (H) or Soup (S). Moreover, suppose that this family’s utility function is given by

**U(H,S) = 5H2S2**

and that the **price of heating oil is $10 per unit** while the **price of soup is $1 per unit.**

1. If the typical poor family is maximizing their utility, how much of its income of **$5040** will be spent on heating oil?
2. The government decides to lift this poor family’s level of utility or satisfaction by subsidizing the family’s consumption (i.e., paying part of the price) of soup. By allowing this family to purchase soup at half the market price (with the other half of the market price paid by the government), how many more units of soup will be purchased?
3. What would be the cost of this program to the government per typical poor family?
4. The government could also achieve its objective of lifting this poor family’s level of satisfaction to the same level as that provided by the soup subsidy program by giving instead a cash subsidy. How large must this cash subsidy be? (*HINT: The answer to this part will be less than your answer to part c. Why?)*

3.) Consider a student's consumption of two goods: Books (B) and Coffee (C). The utility derived from these goods is represented by the following utility function:

**U(B,C) = 3B1.5C0.5**

Where B is the number of books purchased and C is the number of coffee cups consumed.

a. Sketch the indifference curves for U = 50 and U = 150.

b. Given a budget of $60, and with each book costing $10 and each cup of coffee costing $2, illustrate the budget constraint.

c. Determine the utility maximizing quantities of Books and Coffee given the prices and budget. Indicate this solution on your graph. What are the marginal utilities of Books and Coffee at this point? What is the total utility?

d. If a promotional event reduces the price of books to $8, compute the new utility maximizing quantities of Books and Coffee. Illustrate this new solution on your graph. How does this affect the total utility?

e. If the university decides to tax students to bring them back to their original utility level after the promotional event, how much stipend should they tax? Justify your answer by considering the effect of the price reduction on the student's consumption choices.