HS 402: Assignment 1

1. Draw indifference curves that represent the following individuals' preferences for hamburgers and soft drinks. Indicate the direction in which the individuals' satisfaction (or utility) is increasing.

   (a) Joe has convex preferences and dislikes both hamburgers and soft drinks.

   (b) Jane loves hamburgers and dislikes soft drinks. If she is served a soft drink, she will pour it down the drain rather than drink it.

   (c) Bob loves hamburgers and dislikes soft drinks. If he is served a soft drink, he will drink it to be polite.

   (d) Molly loves hamburgers and soft drinks, but insists on consuming exactly one soft drink for every two hamburgers that she eats.

   (e) Mary always gets twice as much satisfaction from an extra hamburger as she does from an extra soft drink.

2. Janelle and Brian each plan to spend ₹ 20,000 on the styling and gas mileage features of a new car. They can each choose all styling, all gas mileage, or some combination of the two. Janelle does not care at all about styling and wants the best gas mileage possible. Brian likes both equally and wants to spend an equal amount on each. Using indifference curves and budget lines, illustrate the choice that each person will make.

3. Suppose that Jones and Smith have each decided to allocate ₹ 1000 per year to an entertainment budget in the form of hockey games or rock concerts. They both like hockey games and rock concerts and will choose to consume positive quantities of both goods. However, they differ substantially in their preferences for these two forms of entertainment. Jones prefers hockey games to rock concerts, while Smith prefers rock concerts to hockey games.

   (a) Draw a set of indifference curves for Jones and a second set for Smith.

   (b) Using the concept of marginal rate of substitution, explain why the two sets of curves are different from each other.

4. Debra usually buys a soft drink when she goes to a movie theater, where she has a choice of three sizes: the 8-ounce drink costs ₹ 1.50, the 12-ounce drink, ₹ 2.00, and the 16-ounce drink ₹ 2.25. Describe the budget constraint that Debra faces when deciding how many ounces of the drink to purchase. (Assume that Debra can costlessly dispose of any of the soft drink that she does not want.)

5. Antonio buys five new college textbooks during his first year at school at a cost of ₹ 80 each. Used books cost only ₹ 50 each. When the bookstore announces that there will be a 10 percent increase in the price of new books and a 5 percent increase in the price of used books, Antonio's father offers him ₹ 40 extra.

   (a) What happens to Antonio's budget line? Illustrate the change with new books on the vertical axis.

(b) Is Antonio worse or better off after the price change? Explain.

6. Brenda wants to buy a new car and has a budget of ₹ 25,000. She has just found a magazine that assigns each car an index for styling and an index for gas mileage. Each index runs from 1-10, with 10 representing either the most styling or the best gas mileage. While looking at the list of cars, Brenda observes that on average, as the style index increases by one unit, the price of the car increases by ₹ 5000. She also observes that as the gas-mileage index rises by one unit, the price of the car increases by ₹ 2500.

   (a) Illustrate the various combinations of style (S) and gas mileage (G) that Brenda could select with her ₹ 25,000 budget. Place gas mileage on the horizontal axis.

   (b) Suppose Brenda's preferences are such that she always receives three times as much satisfaction from an extra unit of styling as she does from gas mileage. What type of car will Brenda choose?

   (c) Suppose that Brenda's marginal rate of substitution (of gas mileage for styling) is equal to S/(4G). What value of each index would she like to have in her car?

   (d) Suppose that Brenda's marginal rate of substitution (of gas mileage for styling) is equal to (3S)/G. What value of each index would she like to have in her car?

7. Jane receives utility from days spent traveling on vacation domestically (D) and days spent traveling on vacation in a foreign country (F), as given by the utility function $U(D, F) = 10DF$. In addition, the price of a day spent traveling domestically is ₹ 100, the price of a day spent traveling in a foreign country is ₹ 400, and Jane's annual travel budget is ₹ 4000.

   (a) Illustrate the indifference curve associated with a utility of 800 and the indifference curve associated with a utility of 1200.

   (b) Graph Jane's budget line on the same graph.

   (c) Can Jane afford any of the bundles that give her a utility of 800? What about a utility of 1200?

   (d) Find Jane's utility maximizing choice of days spent traveling domestically and days spent in a foreign country.

8. Jane receives utility from days spent traveling on vacation domestically (D) and days spent traveling on vacation in a foreign country (F), as given by the utility function $U(D, F) = 10DF$. In addition, the price of a day spent traveling domestically is ₹ 100, the price of a day spent traveling in a foreign country is ₹ 400, and Jane's annual travel budget is ₹ 4000.

   (a) Illustrate the indifference curve associated with a utility of 800 and the indifference curve associated with a utility of 1200.

   (b) Graph Jane's budget line on the same graph.

   (c) Can Jane afford any of the bundles that give her a utility of 800? What about a utility of 1200?

   (d) Find Jane's utility maximizing choice of days spent traveling domestically and days spent in a foreign country.