Microeconomic Theory
Economics 5073

Assignment 4

1. Professor Goodheart always gives two midterms in his communications class. He only uses the higher of the two scores that a student gets on the midterms when he calculates the course grade.

a) Nancy wants to maximize her grade in this course. Let x_1 be her score on the first midterm and x_2 her score on the second midterm. Draw an indifference curve showing all the combinations of scores that Nancy likes exactly as much as $x_1 = 20$ and $x_2 = 70$.

b) Does Nancy have convex preferences over these combinations? Explain.

c) Nancy is also taking another course from Professor Meanheart. Professor Meanheart gives two midterms and discards the higher one. Let x_1 be her score on the first midterm and x_2 her score on the second midterm. **On the same graph**, draw an indifference curve showing all the combinations of scores that Nancy likes exactly as much as $x_1 = 20$ and $x_2 = 70$. Does Nancy have convex preferences over these combinations? Explain.

2. Harry has the utility function $u(x_1, x_2) = \min\{x_1 + 2x_2, 2x_1 + x_2\}$, where x_1 is his consumption of corn chips and x_2 is his consumption of french fries.

a) Draw the locus of points along which $x_1 + 2x_2 = 2x_1 + x_2$ on a graph where x_1 is on the horizontal axis and x_2 is on the vertical axis.

b) Sketch two indifference curves along which Harry's utility is 12 and 6.

c) At the point where Harry is consuming 5 units of corn chips and 2 units of french fries, how many units of corn chips would he be willing to trade for one unit of french fries?

3. Jennifer likes to consume burriots (denoted by x) and hamburgers (denoted by y). Her preferences can be represented with the utility function:

$$u(x, y) = x + 2y$$

a) How many burritos and how many hamburgers will Jennifer consume if the price of a burrito is \$2, the price of a hamburger is \$3 and her income is \$60?
b) Now assume that the price of burritos is p_x, the price of hamburgers is p_y, and her income is I. Calculate Jennifer's demand functions for burritos and hamburgers.