ECO 601
Fall 2004
Problem Set #2

Due: Monday, September 13

1. Which of the following utility functions represents the same preferences as $U(X,Y) = X^{.5}Y^{.5}$? (a) $U(X,Y) = 10\ X^{.5}Y^{.5}$; (b) $U(X,Y) = XY$; (c) $U(X,Y) = \ln X + \ln Y$. Explain.

2. Zack consumes two goods, X and Y. His utility is given by the utility function $U(X,Y) = 2X^{1/3}Y^{2/3}$. He is currently consuming the bundle X=8, Y=8.
   a) What is his level of utility?
   b) Derive his MRS_{XY}?
   c) Graph Zack's indifference curve that contains that bundle and illustrate your answer to (b) in the diagram.
   d) How much additional utility would Zack receive from another unit of X? of Y? Illustrate your answer in the diagram and label the new indifference curves.

3. Melinda has very distinct preferences for her lunchtime meals at MacDonald's. She takes one sip of milkshake for every two bites of hamburger. If she runs out of milkshake before finishing her hamburger, then she stops eating. If she runs out of hamburger before finishing her milkshake, then she stops eating. Illustrate Melinda's indifference curves for milkshakes and hamburgers, and write a mathematical expression for her utility function.

4. Consider the utility function $U(X,Y) = X/Y$. Graph several indifference curves. Is utility increasing in both X and Y, i.e., are both X and Y goods (as opposed to bads)?

5. Nicholson problem 3.8. For part (c), choose specific values for x_o and y_o and for α and β, and then graph some indifference curves.