Economics 302
Microeconomic Theory
Fall 2005, Dr. Shirley Liu

Homework 3

Due: Wednesday, October 26, in lecture

Note: You can always hand it in early, but no homeworks passed the due time will be accepted

1. [7] A consumer consumes two goods (x_1, x_2). Suppose for this consumer, good 1 is an ordinary good, and good 1 and good 2 are substitutes. Graphically illustrate the price offer curve of good one. *Keep your graph general, and make sure you label all axis, intercepts and corresponding budget lines.*

2. [7] A consumer has perfect substitutes preferences such that he is always willing to trade one unit of good two for one unit of good one. Let the prices and income be (p_1, p_2, m). More specifically, assume $p_2 = \$5$ and $m = \$200$. Graphically illustrate the Inverse Demand Curve for good one. *Make sure you label all axis, intercepts (if any), and kinks (if any).*

3. [50] Tracy consumes two goods: $x_1 =$ (Oreos) and $x_2 =$ (glasses of milk). Let $p_1 =$ (price per box of Oreo cookies), $p_2 =$ (price per glass of milk), and Tracy has an income of m. Suppose her demand functions for each of the two goods are: $x_1 = \frac{m}{p_1+4p_2}$, and $x_2 = \frac{4m}{p_1+4p_2}$, respectively.

   (a) [8] For Tracy, is Oreo a normal or an inferior good? Is milk a normal of an inferior good? *Derive your answer rigorously, do not plug in numbers*

   (b) [8] For Tracy, is Oreo an ordinary or a Giffen good? Is milk an ordinary or a Giffen good? *Derive your answer rigorously, do not plug in numbers*

   (c) [4] Determine whether Oreos and milk are substitutes or complements. *Derive your answer rigorously, do not plug in numbers*

   (d) [8] Graphically illustrate the Income Offer Curve. *Clearly state what variables are being held constant, and what variables are to be varied. Then come up with your own examples to construct the Income Offer curve.*
   Make sure you label all axis, corresponding budget lines and their intercepts.

   (e) [8] Graphically illustrate the Engel Curve for Oreos. In general, what is the slope of this Engel Curve? *Clearly state what variables are being held constant, and what variables are to be varied. Then come up with your own examples to construct the Engel curve. Make sure you label all axis and intercepts (if any).*

   (f) [8] Graphically illustrate the Price Offer Curve (for Milk). *Clearly state what variables are being held constant, and what variables are to be varied. Then come up with your own examples to construct the Price Offer Curve.*
   Make sure you label all axis, corresponding budget lines and their intercepts.

   (g) [6] Graphically illustrate the Inverse Demand Curve for Oreos. *Clearly state what variables are being held constant, and what variables are to be varied. Then come up with your own examples to construct the Demand Curve. Make sure you label all axis and intercepts (if any).*

4. [36] Jim likes to consumer $x_1 =$ (hotdogs) and $x_2 =$ (soda). His demand for the two goods are $x_1 = \frac{2m}{3p_1}$ and $x_2 = \frac{m}{3p_2}$. Jim faces prices and income (p_1, p_2, m).

   (a) [8] Determine whether each of the two goods are normal or inferior goods for Jim. *Derive your answer rigorously, do not plug in numbers*

   (b) [8] Determine whether each of the two goods are ordinary or Giffen goods for Jim. *Derive your answer rigorously, do not plug in numbers*

   (c) [4] Determine whether the two goods are substitutes or complements for Jim. *Derive your answer rigorously, do not plug in numbers*

   (d) [8] Graphically illustrate the Income Offer Curve. *Clearly state what variables are being held constant, and what variables are to be varied. Then come up with your own examples to construct the Income Offer curve.*
   Make sure you label all axis, corresponding budget lines and their intercepts.

   (e) [8] Graphically illustrate the Price Offer Curve (for Hotdogs). *Clearly state what variables are being held constant, and what variables are to be varied. Then come up with your own examples to construct the price offer curve.*
   Make sure you label all axis, corresponding budget lines and their intercepts.