14.121 Problem Set #3

Due October 5, 2005

1. MWG Exercise 3.D.5 parts (a), (c), and (d).

2. MWG Exercise 3.G.6 parts (a), (b), and (c).

3. Let the consumption set be $(-\infty, \infty) \times \Re_+^{n-1}$, and suppose that preferences are strictly convex and quasi-linear in the first good. Normalize $p_1 = 1$.

   (a) Show tht the Marshallian demand functions for goods $2, \ldots, n$ are independent of wealth

   (b) Show that the Hicksian demand functions for goods $2, \ldots, n$ are independent of the target utility.

   (c) Argue that the indirect utility function can be written in the form $v(p, w) = w + \phi(p)$ for some function ϕ. What is the form of the expenditure function?

4. A consumer of two goods has utility function $u(x, y) = \max\{ax, ay\} + \min\{x, y\}$, with $0 < a < 1$.

   (a) Draw the indifference curves for these preferences.

   (b) Derive the Marshallian and Hicksian demands.

5. In the last five years there has been a dramatic increase in the price of single-family homes in the Boston area. There has been only a small increase in the rents charged for single-family homes that are offered for rent. Discuss how you would think about modeling rental housing and purchased housing in a family's utility function. What type of utility function might be appropriate? How might one account for the change in relative prices given that the stock of single-family houses is approximately fixed?

1