Econ 6500
Study Problem 1 Spring 2015

1 Deriving Demand from Utility Max

Consider a consumer with the utility function $U = xy$, who faces a budget constraint of $B = P_x x + P_y y$, where B, P_x and P_y are the budget and prices, which are given.

The choice problem is Maximize

$$U = xy \tag{1}$$

Subject to

$$B = P_x x + P_y y \tag{2}$$

The Lagrangian for this problem is

$$Z = xy + \lambda(B - P_x x - P_y y) \tag{3}$$

Questions:

1. From the Lagrange equation show that $x^* = \frac{B}{2P_x}$ and $y^* = \frac{B}{2P_y}$
2. Suppose the budget is fixed at $B = 120$ and the price of Y is fixed at $P_y = 2$ You are to vary the price of X and show the results graphically. In particular let the price of X take on the values $P_x = 1, 2, 3$. Use the graphing space provided as a guide.
3. Re-do [1] and [2] using the utility function $U = x^{1/3}y^{2/3}$

Budget Constraint & Indfference Curve Graph

Demand Curve for X Graph