

## Problem Set #3

### Section One – Deriving Demand Functions

For each of the following utility functions please derive the demand functions for both goods.

1.  $U = x^3y$
2.  $U = \text{Min}[8x, 4y]$
3.  $U = 3x + y$
4.  $U = \ln x + y$
5.  $U = xy + x$
6.  $U = x^2 + y^2$

### Section Two – The Income Expansion Path and the Price Offer Curve

For each of the utility functions above please graph the income expansion path and the price offer curve. (Note: When you graph the IEP assume that the price of each good is \$1. For the PoC assume that the consumer's income is \$100 and that the price of good 2 is \$1.)

### Section Three – Demand Curves and Engel Curves

For each of the utility functions above please graph the inverse demand curve for good 1 and the Engel curve. (Note: When graphing the inverse demand curves assume that the consumer's income is \$100 and that the price of good 2 is \$1. When you graph the Engel curves assume that the price of each good is \$1.)