MID-TERM 2

ECO 6122
MICRO IV
SUMMER 2015

#3 $v(\vec{p}, y) = \dfrac{y}{p_1+p_2}$

a) $x_i = -\dfrac{\partial v/\partial p_i}{\partial v/\partial y}$: ordinary demand by Roy's identity

$$\frac{\partial v}{\partial p_1} = \frac{-y}{(p_1+p_2)^2} \qquad \frac{\partial v}{\partial y} = \frac{1}{p_1+p_2}$$

$$x_1(\vec{p}, y) = \frac{y}{(p_1+p_2)^2} = x_2(\vec{p}, y)$$

b) We know that the following equality must hold:

$$v(p, e(p,u)) = u$$

$$\Rightarrow \frac{e(p,u)}{p_1+p_2} = u \Rightarrow e(p,u) = u(p_1+p_2)$$

c) Direct utility:

(N.B. This was a harder question for someone who has never seen a Leontief production function. I was looking for a reasoning.)

We see that $x_1(\vec{p}, y) = \vec{x}_2(\vec{p}, y)$ regardless of relative prices. This suggests no possibility of substitution between the two goods. The function that represents this is:

$u = \min\{x_1, x_2\}$ or, graphically: