Intermediate Micro Quiz 1

June 6, 2016

1 Shape of Indifference Curves

Consider the utility function

$$u(x_1, x_2) = \min\{x_1, x_2^2\}$$

What do the indifference curves look like for this function?
Indifference curves are the family of functions indexed by all $\bar{u}$ such that

$$\bar{u} = \min\{x_1, x_2^2\}$$

If $\min\{x_1, x_2^2\} = \bar{u}$, then either $x_1 = \bar{u}$ and $x_2^2 > x_1$, or $x_2^2 = \bar{u}$ and $x_1 > x_2^2$. An illustration for $\bar{u} = 4$ can be found in Figure 1:

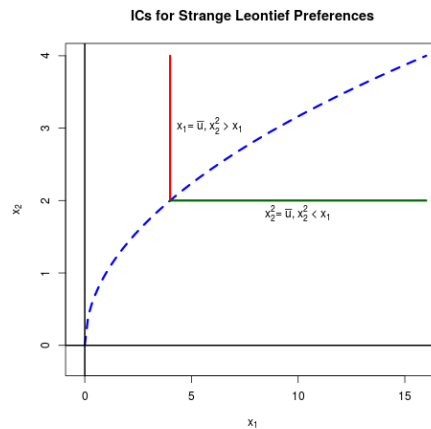**ICs for Strange Leontief Preferences**

Figure 1: Quasi-Leontief Preferences

The story for other values of $\bar{u}$ is similar; thus, like Leontief preferences, all ICs are L-shaped. The difference is that the corner of Leontief preferences follows the 45-degree line; here, they follow the curve $y = \sqrt{x}$.

1

2   Demand

Consider the utility function

$$u(x_1, x_2) = -\left((x_1 - 2)^2 - (x_2 - 3)^2\right)$$

With $p_1 = 5$, $p_2 = 2$, and $y = 20$, what bundle of goods will be chosen?

Hint: What does this function look like? Try to draw its indifference curves

The key is to recognize that this utility function represents satiated preferences.

The function's global behavior can be inferred from Figure 2.

We can also see from Figure 3 that its indifference curves are circles centered at the point $(2, 3)$.

So this individual behaves as follows: If I can afford $(2, 3)$, I buy it, no matter what. Otherwise, I choose the cheapest bundle I can afford that minimizes the distance from $(2, 3)$.

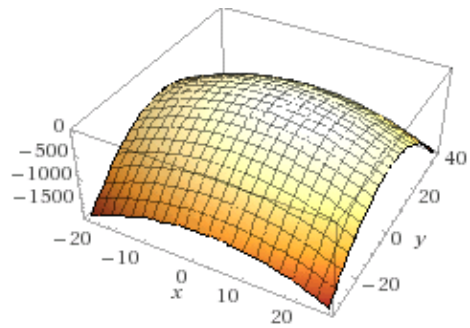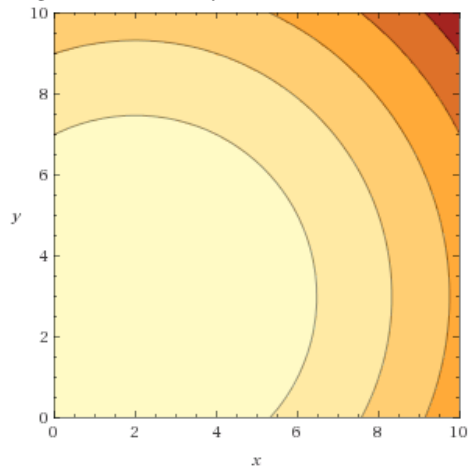In this case, the cost of the $(2, 3)$ bundle is $16 < 20$, so the demand is $(2, 3)$.

Figure 2: Globally Satiated Preferences

Figure 3: Circular Indifference Curves

3