Homework 2

Intermediate Micro - Fall 2009 – Mark Dean

Due Thursday 24th September

Question 1 (Budget Sets)

This question concerns a consumer who is choosing how many of two goods to buy: Footballs (the round ones, that you kick with your foot) and cricket balls (like baseballs, but better). The consumer has an income of $20, and the cost of a football is $4 and a cricket ball is $2

1. Write down the equation for the consumer's budget constraint and graph it in the commodity space
2. The government decides that football is evil and needs to be taxed. They introduce a 50% tax on each football sold (this is called an ad velorem tax). Rewrite and re-graph the budget constraint.
3. A new government is elected that hates all sports. They now tax both footballs and cricket balls at 50%. What does the budget constraint look like now?
4. Due to a threat of revolt amongst sports fans, the government hands out a subsidy of $10 to the consumer. What does their new budget constraint look like?
5. Revolution comes, and all taxes and subsidies are abolished. Even better, the consumer finds a new shop that offers bulk discounts. In this shop, footballs cost $4 each if you buy 3 or less. However, the cost of any additional football after 3 is $2. What does the budget set look like now?

Question 2 (Transitivity)

In the lecture notes, I claim that transitivity means that

1. If a is preferred to b and preferred to c then a must be preferred to c. I
2. If a is indifferent to b and b is indifferent to c, then a must be indifferent to c.

It would seem natural that we would also want property 3

3. If a is preferred to b and b is indifferent to c, the a should be preferred to c.

However, I do not need to write this down as an extra property, because if preferences are complete (as defined in the lecture notes), then (1) and (2) imply (3) (in other words, if (1) and (2) and true, then (3) must also be true. Show me why this must be the case.

Question 3 (Well behaved choices)

Consider the following rules for making decisions. Will the resulting choices satisfy the independence of irrelevant alternatives? In other words, show either that IIA holds for these choices, or explain why it fails

1. The consumer ranks all alternatives from best to worst, then chooses the worst alternative from any available set
2. The consumer is choosing between computer hard drives. In any given choice set they will search through the alternatives alphabetically by maker until they find one larger that 500gig, and they will chose that one. If none of the available hard drives are above 500 gig, they will choose the one with the largest memory.
3. The consumer is choosing between different beers. They always choose the beer with the alcohol content closest to the mean of the set of beers they are considering.

Question 4 (Indifference curves)

In this question you are going to be asked to graph the indifference curves of different types of preference

1. The two goods in the commodity space are plants and plant pots. The consumer will put 3 plants in every plant pot. They will not use plant pots with more or less than three plants
2. The two goods in the commodity space are cats and dogs. The consumer loves cats but hates dogs. Their preferences are determined by the number of cats minus the number of dogs (i.e. one bundle is preferred to another it has more cats minus the number of dogs
3. The two goods in the commodity space are bananas for the consumer and bananas for the consumer's friend. The consumer is selfish, and all they care about in the number of bananas they have
4. Now the consumer is a utilitarian. All they care about is the total number of bananas
5. The two goods in the commodity space are chicken nuggets and fries. The consumer wants exactly 6 chicken nuggets and 50 fries, and all they care about is how close they are to this ideal bundle.

Question 5 (optimization)

Consider the function $-3x^2+6x+14$. Find the critical point of this function. Is this a maximum or a minimum?