AP/ECON 2300 3.0 FF   F2010–11

Assignment 1

due: Tues. October 19, 4 pm

Do **all 5** questions. All count equally.

1. Draw the budget set for the following person.

The person consumes food and text messages. Food costs $1 per kilo. To send any text messages at all, the person must pay a monthly access fee of $30. If she pays the access fee, she can send up to 100 text messages at no extra cost ; she must pay 10 cents per message for any text messages she sends in excess of 100 per month.

She has $180 per month to spend on food and text messages together.

2. Are the following preferences well–behaved (that is are they monotonic and convex)?

The person draws a graph, with the quantity F of food (in kilos) on the horizontal axis, and the quantity C of clothes on the vertical axis. Asked to compare two bundles (F, C) and (f, c), she measures their distance from the origin of her graph with a ruler. She will prefer the first bundle if and only if the point (F, C) is farther from the origin (the point $(0, 0)$) than the point (f, c), in the graph which she has drawn.

Explain briefly.

3. What do the indifference curves look like for a person whose preferences can be represented by the utility function below?

$$u(x, y) = 100 - \frac{1}{x} + y$$

where x is the quantity of good 1 and y is the quantity of good 2.

Are the preferences well–behaved?

continued

4. If a person's preferences could be represented by the utility function

$$u(F,C) = F + C - \frac{1}{C+1}$$

where F and C are the quantities consumed of food and clothing, are the preferences well–behaved?

What is the person's marginal rate of substitution between the two goods if she has these preferences?

5. What would a person's demand function be for clothing, if her preferences could be represented by the utility function defined in question #4 above?

(You also can assume that the price of clothing P_C is low enough, and the person's income Y is high enough, that

$$P_C > P_F > \frac{P_C}{2}$$

and

$$Y > P_C[\sqrt{\frac{P_F}{P_C - P_F}} - 1]$$

where P_F is the price of food.)