

## Assignment 1

due: Wed. February 7, 11.30 a.m.

Do all 5 questions. All count equally.

1. Draw the budget set for the following person.

The person consumes milk and cookies. She owns a farm, which produces 100 litres of milk per week. She is allowed to sell up to 40 litres of milk each week to the milk marketing board, at a price of \$2 per litre. If she wants to sell more than 40 litres of milk per week, she must sell it at the farmers' market, where the price of milk is \$1 per litre.

Any money she earns from selling milk, she can use to buy cookies. Cookies cost \$1 each. Any milk which she chooses not to sell, she can consume herself.

2. Are the following preferences well-behaved? Explain briefly.

The person measures the value of a bundle by its distance from the origin, in a diagram. That is, he prefers the bundle  $(F, C)$  to the bundle  $(\tilde{F}, \tilde{C})$  if (and only if) the point  $(F, C)$  is farther from the point  $(0, 0)$  than is the point  $(\tilde{F}, \tilde{C})$ .

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

$$u(x_1, x_2) = \min(x_1 + 2x_2, 2x_1 + x_2)$$

Are the preferences well-behaved?

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

$$u(x_1, x_2) = x_1 + x_2 + 2\sqrt{x_1}$$

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 good 1, if her preferences could be represented by the utility function defined in question #4 above?