GS/ECON 5010 Assignment 1 F2010

due : Wednesday October 6 before class

Do all 5 questions. Each counts 20%.

1. Are the preferences described below strictly monotonic? Convex? Explain briefly.

The person consumes food and clothing. In comparing two bundles, A and B, she first checks whether either bundle has more than 5 units of food. If either bundle has 5 or fewer units of food, then she prefers strictly the bundle containing more food. If both bundles have 5 or fewer units of food, then she prefers strictly the bundle containing more food. If both bundles have the same quantity of food, and if that quantity no greater than 5 units, then she is indifferent between the bundles. But if both bundles have more than 5 units of food, then she prefers strictly the bundle for which the number of units of food, plus the number of units of clothing is highest. Finally, if both bundles have more than 5 units of food, and if the number of units of food, added to the number of units of clothing, is the same for both bundles, then she is indifferent between them.

2. Are the preferences represented by the utility function below strictly monotonic? Convex? Explain briefly.

$$U(x_1, x_2, x_3) = x_1 x_2 - \frac{x_1 x_2}{x_3 + 1}$$

3. Calculate a person's Marshallian demand functions, if her preferences can be represented by the utility function

$$u(x_1, x_2, x_3) = x_1(\sqrt{x_2} + \sqrt{x_3})$$

4. For what values of income y and prices (p_1, p_2, p_3) will a person demand strictly positive quantities of all 3 goods, if her preferences can be represented by the utility function

$$u(x_1, x_2, x_3) = x_1 + 2\sqrt{x_2} + \ln x_3 \qquad ?$$

5. Calculate the Marshallian demand functions for a consumer whose preferences can be represented by the utility function

$$u(x_1, x_2) = \frac{x_1}{1 + (1/x_2)}$$