GS/ECON 5010 section "B"' Assignment 1 F2012

due : Wednesday October 3 before class

Do all 5 questions. Each counts 20%.

1. Are the preferences described below transitive? Continuous? Strictly monotonic? Explain briefly.

The person consumes 3 goods, white shirts (w), blue shirts (b), and green shirts (g). A bundle $A = (w, b, g)$ will be ranked as at least as good as bundle $A' = (w', b', g')$ if **any** of the following conditions holds :

(i) bundle A contains more shirts than bundle A' (i.e. $w + b + g > w' + b' + g'$) ; or

(ii) bundles A and A' contain the same number of shirts, but bundle A contains more white shirts ($w + b + g = w' + b' + g'$ and $w > w'$) ; or

(iii) bundles A and A' contain the same number of shirts **and** bundles A and A' contain the same number of white shirts **and** bundle A contains at least as many blue shirts ($w + b + g = w' + b' + g'$ and $w = w'$ and $b \geq b'$)

If neither (i) nor (ii) nor (iii) is true, then bundle A is not considered at least as good as bundle A'.

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

$$U(x_1, x_2, x_3) = \sqrt{(x_1 + x_2)^2 + x_3}$$

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

$$u(x_1, x_2, x_3) = x_1 + x_2 + \ln(x_3)$$

4. Calculate a person's Marshallian demand functions, if her preferences can be represented by the utility function (where the expression "$exp(a)$" means e^a)

$$u(x_1, x_2) = 1 - \exp(-x_1) - \exp(-x_2)$$

5. Calculate the Hicksian demand functions, and the expenditure function, for a consumer whose preferences can be represented by the utility function from the previous question,

$$u(x_1, x_2) = 1 - \exp(-x_1) - \exp(-x_2)$$