

due : Wednesday September 28 before class

Do all 5 questions. Each counts 20%.

1. Are the preferences represented by the utility function below strictly monotonic? Convex?

$$u(x_1, x_2, x_3) = \ln(x_1^2 + x_2^2 + x_3^2)$$

In each case, explain briefly.

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

$$u(x_1, x_2, x_3) = -\left(\frac{1}{x_1} + \frac{1}{x_2} + \frac{1}{x_3}\right)$$

In each case, explain briefly.

3. What would a person's Marshallian demands be if her preferences could be represented by the following utility function?

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

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

$$U(x_1, x_2, x_3) = 2\sqrt{x_1} + 2\sqrt{(x_2x_3)}$$

find her Marshallian demands, and her indirect utility function.

5. Find a person's Hicksian (compensated) and Marshallian (uncompensated) demand functions if her expenditure function can be written

$$e(p_1, p_2, u) = p_1u - \frac{(p_1)^2}{p_2}$$

(if $u > 2p_1/p_2$).