GS/ECON 5010 Assignment 2 F2008

due : Friday October 10 8:30 am

Do all 5 questions. Each counts 20%.

1. Could the following 3 equations be Hicksian demand functions (if the reference level of utility u were high enough so that $u + \ln p_2 + \ln p_3 \geq 2 + 2\ln p_1$)? Explain briefly.

$$x_1(\mathbf{p}, u) = u - 2 - 2\ln p_1 + \ln p_2 + \ln p_3$$
$$x_2(\mathbf{p}, u) = u + \frac{p_1}{p_2}$$
$$x_3(\mathbf{p}, u) = u + \frac{p_1}{p_3}$$

2. The following table lists the prices of 3 goods, and the quantities a consumer chose of the goods, in 4 different years.

From these data, what can be concluded about how well off the consumer was in the different years? Explain briefly.

t	p_1^t	p_2^t	p_3^t	x_1^t	x_2^t	x_3^t
1	1	1	1	5	2	3
2	3	1	2	3	12	4
3	1	2	1	5	1	6
4	3	2	5	2	6	1

3. Find all the violations of the strong and weak axioms of revealed preference in the following table, which indicates the prices p^t of three different commodities at three different times, and the quantities x^t of the 3 goods chosen at the three different times. (For example, the second row indicates that the consumer chose the bundle $\mathbf{x} = (4, 4, 6)$ when the price vector was $\mathbf{p} = (1, 3, 5)$.)

t	p_1^t	p_2^t	p_3^t	x_1^t	x_2^t	x_3^t
1	5	3	1	8	2	2
2	1	3	5	4	4	6
3	2	4	2	3	5	3
4	2	5	5	6	2	5

questions continued over

4. Thelma and Louise are both risk–averse expected utility maximizers. Thelma has a utility–of–wealth function

$$U(W) = \sqrt{W} - \frac{8}{W}$$

while Louise has a utility–of–wealth function

$$V(W) = 2 - \frac{4}{\sqrt{W}}$$

Both Thelma and Louise have an initial wealth of $W = 4$.

Find a simple (2–state) risky proposition which Thelma would accept but which Louise would reject. Find a simple (2–state) risky proposition which Louise would accept but which Thelma would reject.

5. Suppose that an expected utility maximizer has a utility–of–wealth function

$$U(W) = \frac{1}{1-\beta} W^{1-\beta} \quad \beta \geq 0$$

The person has an initial wealth of W_0. She has the opportunity to invest (exactly) half of her initial wealth in a speculative stock : with probability π the stock will triple in value, but with probability $1 - \pi$ the stock will be worthless.

Given the person's preference parameter β, and given her initial wealth, what must π be in order to induce her to invest half of her wealth in the stock?