GS/ECON 5010 Assignment 2 F2005

due : Wednesday October 12 before class

Do all 5 questions. Each counts 20%.

1. The following table lists the prices of 2 goods, and the quantities a consumer chose of the goods, in 5 different situations. (For example, the second row indicates that the consumer chose the bundle $\mathbf{x} = (10, 32)$ when the price vector was $\mathbf{p} = (4, 2)$.)

From these data, what can be concluded about the consumer's preferences? Explain briefly.

t	p_1^t	p_2^t	x_1^t	x_2^t
1	5	1	5	40
2	4	2	10	32
3	3	3	11	5
4	2	4	20	11
5	1	5	25	3

2. 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 four different times, and the quantities x^t of the 3 goods chosen at the four different times.

t	p_1^t	p_2^t	p_3^t	x_1^t	x_2^t	x_3^t
1	5	2	7	6	10	12
2	8	4	2	5	12	15
3	10	2	4	10	10	10
4	2	10	2	8	12	10

3. Suppose that a person's utility–of–wealth function could be written

$$u(W) = A - e^{-\beta W}$$

where $\beta > 0$.

What would be the risk premium associated with a project which yielded the person a return of $X > 0$ with probability π, and a payoff of zero with probability $1 - \pi$? How does the premimum vary with the "good state" return X?

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4. Suppose a person's utility–of–wealth function could be written

$$u(W) = W^a$$

where $0 < a < 1$.

Suppose as well that the person had to choose between investing all her initial wealth in a bond, which gave a certain return of r_0, and putting all her initial wealth in a risky asset, the gross return $1 + r$ for which was distributed uniformly over the interval $[0, R]$. (That is, if she put all her wealth W_0 in the risky asset, her end–of–period wealth would be distributed uniformly over $[0, RW_0]$.)

What value of R would make her indifferent between putting all her wealth in the safe asset, and all her wealth in the risky asset? How does this R vary with her initial wealth, with her risk aversion parameter a, and with the gross return $1 + r_0$ on the safe asset?

5.If a production function $f(x_1, x_2)$ has the equation

$$f(x_1, x_2) = [x_1 \ln (\frac{x_1 + x_2}{x_1})]^a$$

where $0 < a < 1$, calculate the marginal product of each input, and the marginal rate of technical substitution. Does the production function exhibit decreasing, constant, or increasing returns to scale? Explain briefly.