GS/ECON 5010   section "B"   Assignment 2   F2013

due : Wednesday October 16   2:30 pm

Do all 5 questions. Each counts 20%.

1. Could the function

$$v(\mathbf{p}, y) = \frac{1}{p_1 + p_2}[y + \frac{(p_1)^2 + (p_2)^2}{p_3} - 6p_3]$$

be an indirect utility function for some consumer with well–behaved preferences? Explain.

(You can assume that the person's income y is large enough, relative to prices, that the consumer's quantities demanded are non–negative.)

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. (For example, the second row indicates that the consumer chose the bundle $\mathbf{x} = (20, 5, 5)$ when the price vector was $\mathbf{p} = (5, 20, 10)$.)

t	p_1^t	p_2^t	p_3^t	x_1^t	x_2^t	x_3^t
1	10	10	10	10	10	10
2	5	20	10	20	5	5
3	5	10	20	5	5	10
4	10	5	20	10	5	15

3. If a person has a constant coefficient of relative risk aversion equal to 2, what is the probability of winning ρ which must be offered the person — as a function of her initial wealth $W_0 > 1000$ — to make her just willing to accept the following bet? The bet : with probability ρ the person wins 1000 dollars, but with probability $1 - \rho$ she loses 1000 dollars.

4. If a person has a constant coefficient of relative risk aversion equal to 2, how much insurance coverage will she want to buy against a loss of L dollars, if the probability of the loss occurring is π, and if the price of one dollar's worth of insurance coverage is p dollars, with $p \geq \pi$?

5. For what values of (x_1, x_2, x_3) does the production function

$$f(x_1, x_2, x_3) = (x_1)^2 + A(x_2 x_3)^{1/3}$$

exhibit locally increasing returns to scale (where $A > 0$ is some constant)?