NAME:

STUDENT NUMBER:

ECO 3153
Fall 2009
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Midterm 1
October 9^{th}, 2009

Instructions:

1. All questions should be answered on the questionnaire. Use the back of the pages as scrap paper.

2. Calculators are *not* permitted during this exam.

3. The marks for each question are given in bold following the question. Budget your time accordingly.

4. The maximum grade is **100**.

5. This exam consists of **10** pages and **4** questions. It is your responsibility to ensure that your exam questionnaire is complete.

6. Good luck!

Question 1

a) List all the axioms imposed on consumer preferences (and on the utility function) when solving the standard utility maximization (or expenditure minimization) problem. **7 points**.

b) State two implications of local non-satiation (or greed) on the shape of the indifference curve. **4 points**.

c) In class, we assumed the absence of 'bliss-points.' Would a bliss-point be problem for a utility-maximization problem if (in a two-good situation) the budget constraint passed South-West of the bliss-point? **4 points**.

d) Graph the indiffirence curves of an individual who has the following preferences. She regards one pint of cider and one point of beer as equal utility; and one pint of either as strictly preferable to 1/2 pint of both. **5 points**.

Question 2

a) Show that

$$\frac{\partial H^i(p,v)}{\partial p_j} = \frac{\partial H^j(p,v)}{\partial p_i}$$

10 points.

b) Show that

$$H^i(p,y) = -\frac{\partial V(p,y)/\partial p_i}{\partial V(p,y)/\partial y}$$

10 points

Question 3

Let a consumer's indirect utility function be

$$V(p, y) = \sum_{i=1}^{n} \ln\left(\frac{y}{np_i}\right)$$

a) What is the marginal utility of income? **5 points**.

b) What is the value of the Lagrange multiplier from the if you were to solve the utility maximization problem? **5 points**.

c) What is the Marshallian demand function for good i? **10 points**.

Question 4

Imagine a consumer with preferences that can be represented by the following utility function:

$$U(x) = -\sum_{i=1}^{n} 1/x_i$$

For each good i, γ_i represents the minimal consumption of this good. Assume that the consumer has a fixed income y.

a) If p_i represents the price of good i, write down the budget constraint. **5 points**.

b) Briefly explain why we should expect an interior solution. **5 points**.

c) Compute the Marshallian demand functions for each good (Assume an interior solution). **10 points**.

d) Verify that these Marshallian demand functions are homogeneous of degree 0 in all prices and income. **5 points**.

e) Compute the indirect utility function. **5 points**.

f) Compute the Hicksian demand functions for each good. **10 points**.