GS/ECON 5010 APPLIED MICROECONOMICS

Midterm Exam October 26 2005 2:30 – 3:50 pm

Do all 4 questions. All count equally.

1. State and prove Roy's Identity (the relation between a consumer's indirect utility function and her Marshallian demand functions).

2. Derive the **Hicksian** (compensated) demand functions of a consumer whose preferences can be represented by the (direct) utility function

$$u(x_1, x_2) = x_1 + \ln x_2$$

3. Alice and Bob are both risk averse von Neumann–Morgenstern expected utility maximizers. Alice's utility–of–wealth function is

$$u(w) = \ln(w + a)$$

and Bob's utility–of–wealth function is

$$\tilde{u}(w) = \ln(w + b)$$

with

$$b > a > 0$$

(a) What are Alice's and Bob's coefficients of relative risk aversion?

(b) If Alice is just willing to undertake some risky undertaking, will Bob be willing?

4.Show that a firm which is a price taker (on both input and output markets) will make positive economic profits only if its technology exhibits decreasing returns to scale.