



ADVANCED MICROECONOMICS

Midterm - November 2013

Name: _____

NIU: _____ Group: _____

Grade: _____

Instructions: This exam consists of four questions. You have one hour and fifteen minutes to provide a reasoned answer to all the exercises. Calculators are not permitted. Write the quiz entirely in ink.

- 1 State and prove the Walras' Law. (20 points)
- 2 Provide an answer to the following questions: (20 points)
 - (a) Define the von Neumann-Morgenstern expected utility function for lotteries over money.
 - (b) Define when an agent is risk averse. Give a formal interpretation.
 - (c) Define the Arrow-Pratt coefficient of absolute risk aversion.
 - (d) State the relation (you do not need to prove it) between risk aversion and the coefficient R_A .
- 3 Consider an economy with two consumers and two goods. The consumers' initial endowments are $\omega_1 = \omega_2 = (1, 1)$, and their preferences are given by the following utility functions: (30 points)

$$u_1(x_{11}, x_{12}) = \ln x_{11} \quad \text{and} \quad u_2(x_{21}, x_{22}) = x_{21}^2 + x_{22}^2$$

- (a) Compute the Walrassian equilibrium.
 - (b) Is the previous allocation Pareto efficient?
 - (c) Obtain the set of all Pareto Efficient allocations if the initial endowments are $\omega_1 = (3, 1)$ and $\omega_2 = (2, 2)$.
- 4 In the future there are two possible states of the world $\{1, 2\}$ with probabilities $p > 2/5$ and $1 - p$, respectively. The agent can choose between two assets, $r_1 = (2, 6)$ and $r_2 = (6, 8)$ whose prices are $q_1 = 2$ and $q_2 = 4$, respectively. The initial wealth of this agent is w_0 . Let α be the amount of asset r_2 that the agent purchases. The monetary payoff function is $v(x) = \ln x$. (30 points)
 - (a) Is this agent risk averse?
 - (b) Calculate the optimal amount α of asset r_2 that the agent should buy?
 - (c) How does α change when the initial wealth varies?
 - (d) Which would the value of α be if the prices are $q_1 = 4$ and $q_2 = 2$?