

**Intermediate Microeconomics**  
**Fall 2002**  
**Assignment 5**

*Due Date: Monday, October 14*

*Be sure to show all of your work and clearly indicate your final response to each question. For exercises from the workbook you can hand in the completed workbook pages or provide the answers on separate sheets of paper. Please be sure that your homework is stapled before handing it in.*

1. An individual has a utility function given by

$$u(x, l) = .5x + .5l,$$

where  $x$  is a consumption good purchased in the market that has price 1 and  $l$  denotes leisure. The total amount of time the individual has available in a day to allocate between work and leisure is  $T = 12$  hours. The individual's nonlabor income is  $I = 30$ . He can sell his time in the market at the rate of  $w$  per hour.

- (a) If the individual's wage is 10, how much time will he spend in the market?
  - (b) If the individual's wage offer is .5, how much time will he spend in the market?
  - (c) Find the wage  $w^*$  at which he would be indifferent between being out of the market or entering it.
  - (d) If  $I$  is 0, will the individual always spend some time in the market? Will his labor supply be a function of his wage offer given this particular utility function?
2. Repeat Parts (a) and (b) of Problem 1 for the case in which the individual's utility function is given by

$$u(x, l) = \min(x, l).$$

3. Workouts in Intermediate Microeconomics (WIM) 12.1
4. WIM 12.3
5. WIM 12.11
6. WIM 12.12

7. There are two types of individuals in a population. Type  $A$  individuals have a probability of having an accident equal to .5, while type  $B$  individuals have an accident probability of .25. If any individual has an accident [either type  $A$  or type  $B$ ], their income is 4. If they do not have an accident, their income is 6. All individuals have utility functions given by  $U = \ln(C)$ , where  $C$  is equal to income. Insurance markets are assumed to be competitive.
- (a) i. If an individual's type is perfectly observable by insurers, how much will type  $A$  individuals be charged per unit of coverage? How much will type  $B$  individuals be charged? Determine how much insurance will be bought by each of the two types, and determine the expected utility level of each type.
- ii. Now assume that an individual's type is not observable by insurers. In the pooling equilibrium where all individuals are charged the same price of coverage, determine what that price will be. Then determine how much coverage will be bought by type  $A$  individuals and by type  $B$  individuals in equilibrium. How do the expected welfare levels of the two types compare with their welfare levels when their types are observable?