Economics 8103
Microeconomic Theory
Spring-1 2004

Problem Set 3
Due: February 12, 2004

All three problems below concern an auction in which an indivisible object may be awarded to one of $I$ bidders. We assume the following special case of the independent private values model: the agents’ valuations $\theta_1, \ldots, \theta_I$ are independent random variables, each of which is uniformly distributed on the interval $[\underline{\theta}, \bar{\theta}]$ where $\bar{\theta} > \theta > 0$. The seller’s valuation of the object is 0.

Problem 1: (33 pts.) Consider a second price sealed bid auction with a reserve price $b_0$: the object is awarded to the highest bidder, who pays the maximum of $b_0$ and the second highest bid. (If no one bids above $b_0$ there is no sale.)

(a) What are the equilibrium strategies?

(b) Compute the expected revenue to the seller as a function of $b_0$. What value of $b_0$ maximizes expected revenue?

Problem 2: (33 pts.) Now consider a first price sealed bid auction with a reserve price $b_0$: if no one bids above $b_0$, there is no sale, and otherwise the highest bidder wins and pays her bid. The tasks are the same:

(a) What are the equilibrium strategies?

(b) Compute the expected revenue to the seller as a function of $b_0$. What value of $b_0$ maximizes expected revenue?

Problem 3: (34 pts.) Problem 23.D.5 (p. 921) of MWG.