Economics 611    Game Theoretic Microeconomics    Spring 2008
Final Exam

All Syracuse University policies and procedures concerning academic honesty apply to this course:

"Syracuse University students shall exhibit honesty in all academic endeavors. Cheating in any form is not tolerated, nor is assisting another person to cheat. The submission of any work by a student is taken as a guarantee that the thoughts and expressions in it are the student's own except when properly credited to another. Violations of this principle include: giving or receiving aid in an exam or where otherwise prohibited, fraud, plagiarism, the falsification or forgery of any record, or any other deceptive act in connection with academic work. **Plagiarism is the representation of another's words, ideas, programs, formulae, opinions, or other products of work as one's own either overtly or by failing to attribute them to their true source.**" (Section 1.0, University Rules and Regulations)

**WARNING!!!**

While homework problems may have been done cooperatively, **exams are individual work.** Do not communicate about this exam with **anyone** except the instructor [x3-2345 or e-mail to jskelly@maxwell.syr.edu]. **Violation of this rule will result in a grade of 0 for the exam.** Any notices will be sent to you by e-mail; **check occasionally.**

**EXPLAIN** your answers carefully.

**DUE: Noon, Tuesday, May 6th.**
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The three problems are each worth 33 points.

1. (Principal-agent / moral hazard)

What is the effect of the functional form for detection probabilities in the effort example at the beginning of Handout #8? **Redo** that example with \( \pi(E) = 1 - E^\beta \), where \( \beta \geq 1 \) and \( V(L_E) = L_E^\alpha \) for \( 0 < \alpha < 1 \). In particular, answer the comparative statics questions: How do solution values of effort, the equilibrium wage, and employment vary with \( \alpha \) and \( \beta \)? [i.e., determine signs of relevant partial derivatives.] [Non-Weierstrass question]

2. (Insurance; moral hazard)

Later in Handout #8, we examined unemployment insurance for an example where the probability of being laid off was .25, \( Y = 400 \), \( U(\cdot) = (\cdot)^{\frac{1}{2}} \), and \( \pi(E) = e^{-E/4} \). How important are these particular functional forms? **Re-do** the analysis on pp. 4-5 for \( \pi(E) = 1/(1 + E) \). In particular, get the analogs of the diagrams of page 5. [Non-Weierstrass question]

3. (Optimization)

Consider \( f: \mathbb{R}_+ \to \mathbb{R} \). Assume:

(1) \( f \) is continuous;
(2) with \( f(a) > 0 \) for some \( a \) in \( \mathbb{R}_+ \);
(3) \( \lim_{x \to -\infty} f(x) = 0 \).

(A) Show there exists a **global** maximum for \( f \).
(B) Show each of these conditions is necessary.