QUIZ I ECON500,

October 1, 2007

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All questions must be answered on this form. You must show your work. Use the back of this form and the last page as scratch paper—do not use your own paper.

Question 1 Suppose preferences \geq are rational and convex, but not necessarily continuous.

Let x(p, w) be the Walrasian demand at prices p and w. Prove that x(p, w) is a convex set if $x(p, w) \neq \emptyset$.

Proof Recall that the preferences are convex if $\{z \in \mathbb{R}^L_+ | z \ge y\}$ is a convex set for all $y \in \mathbb{R}^L_+$. Let $x, x' \in x(p, w)$ and $\alpha \in [0, 1]$.

Complete the proof in the box below. That is, you must use the same notation. Also, you must specify the choice of y (in the definition of convexity). Otherwise you will not get credit.

Let y =

Question 2 Let $X = \{a, b, c\}$ and $\mathfrak{B} = \{\{a, b\}, \{a, c\}, \{b, c\}\}$.

Suppose that $C(\{a, b\}) = \{b\}$. Define the remaining choices below such that the choice structure satisfies the weak Axiom, such that $C(B) \neq \emptyset$ for all $B \in \mathfrak{B}$ but that the choice is not rationalizable, i.e., there don't exist rational preferences \geq that generate $C(\cdot)$.

$C(\{a,c\}) =$	
$C(\{b, c\}) =$	

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Question 3 Suppose a utility function is given by $u(x_1, x_2) = \max\{2x_1, x_2\}$. Then

x(5,2,w) = (,)

(Note that (5, 2) is the price vector).

Scratch paper: Anything on this page will not be graded.