Microeconomic Analysis

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Homework 4

Due Thursday 3rd October

Question 1 Consider the following preferences on $\mathbb{R}$: $x \succeq y$ if $x \geq y$ or $y \leq 0$. Show that $\succeq$ are continuous and convex, but that there exists no concave function which represents them

Question 2 Rubinstein Chapter 4 question 6 (note that this should be a question about separability of preferences!)

Question 3 Three questions about the effect of income. Assume that preferences are locally non-satiated, continuous and monotonic

1. Show graphically that, in general, an increase in income can either increase or decrease demand for a good. In the two good case, if an increase in income decreases demand for good 1, what must be true of the demand for good 2?
2. Show that if a consumer has a homothetic preference relation, then their demand function is homogeneous of degree one in w.
3. Consider a consumer in a world with $K = 2$, who has a preference relation that is monotonic, continuous, strictly convex, and quasi-linear in the first commodity. How does the demand for the first commodity change with w?

Question 4 Some properties of h. Assume throughout that preferences are strictly monotonic, h is non-empty for all p and u, and the utility function is continuous.

1. Show that if preferences are convex then $h(p, u)$ is a convex set, and if preferences are strictly convex then $h(p, u)$ is unique

2. Show that if u is homogenous of degree 1 then both $h(p,u)$ and $e(p,u)$ are homogenous of degree 1 in u

Question 5 Determine whether the following consumer behavior patterns can be rationalized[1] (assume K = 2). If they can be rationalized, come up with a utility function that will do the trick. If not, find a violation of GARP

1. The consumer consumes up to the quantity 1 of commodity 1 and spends his excess wealth on commodity 2.
2. The consumer chooses the bundle $(x_1; x_2)$ which satisfies $x_1/x_2 = p_2/p_1$ and costs w.
3. The consumer chooses the bundle $(x_1; x_2)$ which satisfies $x_1/x_2 = p_1/p_2$ and costs w.

[1] You may want to use the result regarding the slutsky matrix to do this.