Ec 703

Dilip Mookherjee

PROBLEM SET NO. 3

1. Consider a consumer with a consumption set $\Re^L_+$, a utility function U which is continuous and strictly quasiconcave, and an endowment $\omega \in \mathrm{int}\Re^L_+$. Provide a complete proof that the consumer's excess demand function $x(p)$ is well-defined (i.e., is unique and finite-valued) and continuous at every $p >> 0$.

2. If in addition to the hypothesis of 1 above, U is strictly monotone, provide a complete proof of property 17.B.2 (v):

$$\max_l \{x_l(p^n)\} \to \infty \quad \text{if} \quad p^n \to p, \quad \text{with} \quad p^n >> 0, p_k = 0 \quad \text{for some} \quad k.$$

3. Provide an example where preferences are locally nonsatiated and the demand function $x(p)$ is well defined for every $p \in \Delta^L$, the unit simplex in $\Re^L$ (i.e., including the boundary).