

Econ 703 Homework 1

Fall 2008, University of Wisconsin-Madison

Prof. Raymond Deneckere

Due on Sep. 11, Thu. (in the class)

1. Prove the following statement: If $x \in \phi$ then x is a blue banana. (Hint: Use a contrapositive proof).
2. Consider an exchange economy, in which the utility functions and endowments are a continuous function of a vector of parameters $\rho \in \mathbb{R}^k$. Let $E(\rho)$ denote the set of competitive equilibrium prices of this exchange economy. Let $p \in E(\rho)$, and interpret the following statement:
For every $\varepsilon > 0$ there exists $\delta > 0$ such that for all ρ' satisfying $\|\rho - \rho'\| < \delta$ there exists $p' \in E(\rho')$ such that $\|p - p'\| < \varepsilon$.
Find the negation of this statement.
3. Write the contrapositive and converse of the following statement: “If $x < 0$, then $x^2 - x > 0$ ”, and determine which (if any) of the three statements is true.
4. Let $f : \mathbb{R} \rightarrow \mathbb{R}$ be the function given by the rule $f(x) = x^3 - x$. By restricting the domain and range of f appropriately, obtain from f a bijection g . Draw the graphs of g and g^{-1} .
5. Sundaram, #5, p. 67.