Introduction to Economic Analysis
Fall 2004
Problem Set I

• **Question 1**
  - Consider a group of individuals A, B, and C and the relation at least as tall as as in A is at least as tall as B. Does this relation satisfy the completeness and transitivity properties?

• **Question 2**
  Determine if completeness and transitivity are satisfied for the following preferences defined on \( x = (x_1, x_2) \) and \( y = (y_1, y_2) \).

  - \( x \succeq y \) iff \((\text{if and only if})\) \( x_1 \leq y_1 \) and \( x_2 \leq y_2 \).
  - \( x \succeq y \) iff \((\text{if and only if})\) \( x_1 \geq y_1 \) and \( x_2 \leq y_2 \).
  - \( x \succ y \) iff \( x_1 > y_1 \) or \( x_1 = y_1 \) and \( x_2 > y_2 \).

• **Question 3**
  Let \( p_1, p_2, m \) be the set of prices and income. The utility function is given by:

  \[
  u(x_1, x_2) = x_1^\alpha x_2^{1-\alpha}
  \]

  1. Determine the demanded bundle as a function of the prices, \( p_1 \) and \( p_2 \), the income, \( m \), and the parameter \( \alpha \).

  2. What fraction of her income a consumer with this utility function will spend on good 1? Does this fraction depend on income \( m \)? Does it depend on the price ratio, \( \frac{p_1}{p_2} \)?

  3. Is good 2 a normal good? Explain.