

Do all 4 questions. All count equally.

1. Show that a person's preferences can be represented by a continuous utility function, if the preferences are complete, transitive, continuous and strictly monotonic.

2. Derive the Marshallian demand functions for goods 1 and 2, for a person whose preferences can be represented by the utility function

$$u(x_1, x_2) = 300 + \sqrt{x_1} + \sqrt{x_2}$$

3. Suppose that a person's utility of wealth function was $U(W) = aW - bW^2$ where $a > 0, b > 0$ (for wealth $W < a/2b$).

(a) What is the person's coefficient of absolute risk aversion, and her coefficient of relative risk aversion?

(b) If this person had a fixed amount of wealth to allocate between an asset with a certain rate of return r_0 , and another "risky" asset with a stochastic return, how would the amount she invested in the risky asset vary with her initial wealth?

4. (a) What is a homothetic production function?

(b) What form will the firm's cost function take, if its production function is homothetic?

(c) What form will the firm's conditional input demand functions take, if its production function is homothetic?