

Demand Theory Exercises

1. A household's preferences are described by the utility function $u(x, y) = \alpha \log x + \beta \log y$.
 - (a) Derive the marginal rate of substitution function.
 - (b) Derive the demand function for each of the two goods.
 - (c) Compare your answers to Example 3 in the lecture notes.

2. A household's preferences are described by the utility function $u(x, y) = y + 2 \log(1 + x)$.
 - (a) Derive the marginal rate of substitution function.
 - (b) Draw one of the household's indifference curves.
 - (c) Derive the household's demand function for each of the two goods.

3. A household's preferences are described by the utility function $u(x, y) = y + 30x - x^2$.
 - (a) Derive the marginal rate of substitution function.
 - (b) Draw one of the household's indifference curves.
 - (c) Derive the household's demand function for each of the two goods.

4. A household's preferences are described by the utility function $u(x, y) = a\sqrt{x} + \sqrt{y}$.
 - (a) Derive the marginal rate of substitution function.
 - (b) Draw one of the household's indifference curves.
 - (c) Derive the household's demand function for each of the two goods.