Consumer and Producer Theory Andrei Gomberg
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EXERCISE 4: Utility Maximization and Expenditure Minimization

Part 1. Exercises 2.D.3, 3.D.4, 3.D.5 (a - c), 3.D.6, 3.E.4, 3.E.6, 3.E.7, 3.E.8 (plot indirect utility as a function of w and expenditure as a function of u).

Part 2.

Let $X = \mathbb{R}^2_+$ and let preferences be represented by the following utility functions:

$$u(x_1, x_2) = \min\{3x_1 + x_2, 2x_2\}$$

$$u(x_1, x_2) = \max\{\alpha x_1, \beta x_2\} \quad , \quad \alpha > 0, \beta > 0$$

$$u(x_1, x_2) = \max\{\alpha x_1, \alpha x_2\} + \min\{x_1, x_2\} \quad , \quad \alpha > 0$$

Derive the Walrasian and Hicksian demand, indirect utility and expenditure functions.