

Advanced Microeconomics, 2025/2026
Master of Science in Economics
Problem Set 3

21/11/2025

Question 1 Consider a consumer's preferences represented by the following utility function:

$$u(x_1, x_2) = \min\{ax_1, bx_2\}$$

with $a, b > 0$.

- Compute the consumer's Walrasian demands for goods 1 and 2.
- Compute the indirect utility function.
- Check that the Walrasian demands satisfy homogeneity of degree zero in (p, w) and Walras' law.
- For the indirect utility, check that it is non-increasing in prices and increasing in wealth.

Question 2 Prove that a solution to the EMP exists if $p \gg 0$ and there is some $x \in \mathbb{R}_+^L$ satisfying $u(x) \geq u$.

Question 3 Consider preferences represented by the constant elasticity of substitution (CES) utility function:

$$u(x_1, x_2) = (x_1^\rho + x_2^\rho)^{1/\rho}$$

- Compute the Hicksian demands for goods 1 and 2 and the expenditure function.
- Using the duality of UMP and EMP, derive the indirect utility function from the expenditure function.