

Microeconomics I
Assignment on General Equilibrium, 2022-2023

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Sara and Roberto live in a two-person pure-exchange economy. Sara's endowment is $e^S = (2, 0)$, whilst Roberto's endowment is $e^R = (1, 3)$. The preferences for Sara and Roberto are described by the utility functions

$$u_S(x_1, x_2) = x_1^{1/2} + x_2^{1/2}$$

and

$$u_R(x_1, x_2) = x_1^3 - 9x_1^2 + 15x_1 + x_2^3 - 9x_2^2 + 15x_2.$$

(a) Construct the Edgeworth box for this economy, and graph approximate indifference curves for Sara and Roberto given their initial endowments.

(b) Show that the prices $p = (1, 1)$ are Walrasian equilibrium prices for this economy.

(c) Find the set of Pareto efficient allocations for this economy.

(d) Are the Walrasian equilibrium allocations at the prices $p = (1, 1)$ Pareto efficient? If not, why has the First Fundamental Welfare Theorem failed?