Homework

(İlk 2 soruyu bu hafta lisans öğrencilerine de sordum.)

1. Consider 2 individuals who consume two goods: and . The utility function of individual 1 is

and the utility function of individual 2 is

The initial endowments of individual 1 is which means she has 2 units of x and 0 unit of y. The initial endowments of individual 2 is which means she has 1 units of x and 3 unit of y.

1. Calculate the marginal rate of substitution for both individuals.
2. Is no-trade (consuming initial endowments) Pareto-efficient?

2) Solve the same questions assuming

and the utility function of individual 2 is

1. Consider an exchange economy . Assume that and the consumption plan of each is . Likewise, the initial endowment of each is . The feasibility constraint is

The utility of each is

which is a quasi-concave and smooth function in . This is a standard economy with a private good x and a public good y. That is because, good y can be consumed by everyone without rivalry or exclusion.

1. Formulate the social planner’s program of maximizing weighted sum of utilities subject to the feasibility constraint.
2. Derive the optimality conditions of the social planner’s problem using the Lagrange method.
3. The answer in part (b) is also the Pareto-efficiency conditions. Compare your answer to the standard MRS condition of Pareto-efficiency that we discussed in the class. What is the impact of introducing a public good?

(Hint: The answer to this question is known as “Samuelson condition”. Google it.)