ADVANCED MICROECONOMICS II

Problem set 3: Welfare Economics

1. Find the contract curve and the utility frontier of the following 2x2 exchange economy:

$U_1 = x_{11}^{1/2} x_{12}^{1/2}$, $w_1 = (800, 175)$,

$U_2 = x_{21}^{1/2} x_{22}^{1/2}$, $w_2 = (400, 125)$

Compute the Walrasian equilibrium and verify that a) the Walrasian allocation is Pareto efficient, and 2) the Walrasian equilibrium levels belong to the the utility frontier.

2. Find the social optima of the above economy (in terms of allocations) for the following social welfare functions:

a) $W=u_1+u_2$

b) $W=u_1u_2$

c) $W=Min\{u_1, u_2\}$

Is the Walrasian equilibrium a social optimum?

Which are the Walrasian prices supporting the social optimum defined by the minimax social welfare function?

3. Find the contract curve and the utility frontier of the following 2x2 exchange economy:

$U_1 = x_{11}x_{12}$, $w_1 = (1, 0)$,

$U_2 = Min\{x_{21}x_{22}\}$, $w_2 = (0, 1)$

Compute the Walrasian equilibrium and verify that a) the Walrasian allocation is Pareto efficient, and 2) the Walrasian equilibrium levels belong to the the utility frontier.

4. Find the social optima of the above economy (in terms of allocations) for the following social welfare functions:

a) $W=u_1+u_2$

b) $W=u_1u_2$

c) $W=Min\{u_1, u_2\}$

Is the Walrasian equilibrium allocation a social optimum?

5. Consider the following 2x2 exchange economy:

$U_1 = x_{11}^{\alpha} x_{12}$, with $\alpha > 0$, and $w_1 = (1-\varepsilon,\ 1-\varepsilon)$,

$U_2 = x_{21} x_{22}^{\beta}$, with $\beta > 0$, and $w_2 = (\varepsilon, \varepsilon)$,

Show that an equal splitting of the initial endowments is not necessarily Pareto efficient.