

1. Find the cooperative strategy, the TU solution, the side payment, the optimal threat strategies, and the disagreement point for the following bimatrix game:

$$\begin{pmatrix} (6, 1) & (4, 2) & (1, 4) \\ (0, 4) & (4, 5) & (3, 2) \\ (3, 3) & (4, 4) & (3, 5) \end{pmatrix}.$$

2. Two players are to divide \$2000 between them. The utility functions of the players are the amounts of money they receive: $u_1(x) = u_2(x) = x$. If they cannot come to an agreement, neither of them receives anything. For the following two cases, describe NTU feasible set, the threat point, and the Nash solution (based on the Nash Bargaining Model).

(a) Given any division that the players agree upon, the first player receives his full share under the agreed division and the second player receives 60% of his full share after paying a tax of 40%.

(b) The first player pays a tax of 20% and the second player pays a tax of 30%.

3. Find the lambda-transfer solution of the NTU game with bimatrix

$$\begin{pmatrix} (3, -2) & (2, -1) \\ (2, 1) & (1, 0) \end{pmatrix}.$$

Sketch the graph of the NTU feasible set and the values $\varphi(\lambda)$ for $\lambda > 0$. This should determine λ^* , from which you can evaluate $\varphi(\lambda^*)$.