

Problem 1

The first problem

Problem 2

The second problem

Problem 3

- (a) Given a market where we have : 3 markets agents $M = \{1, 2, 3\}$, 5 goods at the market $N = \{1, 2, 3, 4, 5\}$. The initial endowment of the agents $w^1 = (0, 2, 0, 1, 0)$, $w^2 = (0, 2, 1, 0, 1)$, $w^3 = (1, 0, 0, 3, 0)$, $u_1(x^1) = 3x_1^1$, $u_2(x^2) = 4x_2^2 + 2x_3^2$, $u_3(x^3) = 2x_2^3 + x_4^3$. Given $p = (p_1, p_2, \dots, p_5)$, give the expressions to get x^* , the optimal x for every agent. Explain the property: If $x_j^{i*} > 0$, then $\forall t \ \& \ p_t > 0 : \frac{u_j^i}{p_j} \geq \frac{u_t^i}{p_t}$
- (b) Do normalization and atomization of the market. Why the demand graph is non-zero indegree ?
- (c) What are the differences between the initial setting of "Linear Utility Market" and "Fisher Market"?