1 Second Welfare Theorem

Proposition 1 *Consider an Economy* $(\{X_i, \succeq_i\}, Y_j, \bar{\omega})$. *Assume* Y_j *is convex,* $\succeq_i$ *is convex and LNS. Then for every POA* (x^*, y^*) *there is a price vector* p *non zero such that* (x^*, y^*, p) *is a quasiequilibrium with transfers, i. e., there is an assignment of wealth levels* $w : \sum_i w_i = p\bar{\omega} + \sum p y_j^*$ *such that*

1. Every firm maximizes profits
2. For every consumer i if $x_i \succ_i x_i^*$ then $px_i \geq w_i$.
3. Markets clear.

Proof. (The very best) $V_i = \{x_i : x_i \succ_i x_i^*\}$, $V = \sum_i V_i$
(The feasible) $Y = \sum Y_j$, $Y + \{\bar{\omega}\}$ ■

1. V is convex
2. $Y + \{\bar{\omega}\}$ is convex
3. Their intersection is empty
4. There is a p and r : $pz \geq r$ for any z in V and $pz \leq r$ in any z in $Y + \{\bar{\omega}\}$.
5. If z is in the closure of V then $pz \geq r$
6. If z is on both boundaries, $pz = r$
7. Firms maximize profits, as for any $z = \bar{\omega} + y_j + \sum_{k \neq j} y_k^* \in Y + \{\bar{\omega}\}$
$$pz \leq r = p\left(\bar{\omega} + \sum_j y_j^*\right)$$
8. Consumers max: if $x_i \succ_i x_i^*$ then $px_i \geq px_i^*$
9. Wealth levels are
$$w_i = px_i^*.$$