**Super 5a: Exchange**

i. Find the demand function for $x_A$ and $y_A$ for $A$ with utility function $U_A = x_A^\alpha y_A^\alpha$ with income $M$ and price of $x$ and $y$ at given at $1$ and $p$.

ii. Both $A$ and $B$ have utility functions $U_A = x_A^\alpha y_A^\alpha$ and $U_B = x_B^\alpha y_B^\alpha$ where the $x_A + x_B = \bar{x}$ and $y_A + y_B = \bar{y}$. Find the contract curve, i.e., the locus of all the pareto-efficient outcomes.

iii. Let $\bar{x} = \bar{y} = 16$ and $A$ and $B$'s endowment be $(1, 15)$ and $(15, 1)$. Find the excess demand function and competitive market equilibrium price $p$.

iv. Show that at the competitive market equilibrium, $A$ and $B$ consume bundles that are pareto efficient.