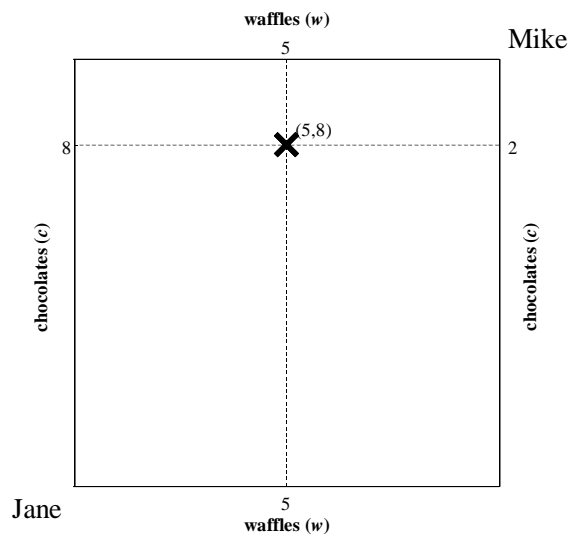


PUAF 8216 Microeconomics Section 3
 Lab Summary 5
 6 October 2000

Mike and Jane are stranded on a dessert island with only two commodities: chocolates (c) and waffles (w). Mike's utility for these two goods can be expressed by the function $U_M(c_M, w_M) = c_M + w_M$ (where c_M and w_M are the quantities of chocolates and waffles that Mike consumes), and Jane's utility can be expressed by $U_J(c_J, w_J) = c_J^{1/2} w_J^{1/2}$ (where c_J and w_J are the quantities of chocolates and waffles that Jane consumes). There are only 10 chocolates and 10 waffles on the island. Presently, Mike has 2 chocolates and 5 waffles.

- a. Draw an Edgeworth Box diagram, label the axes, and show the initial endowment.



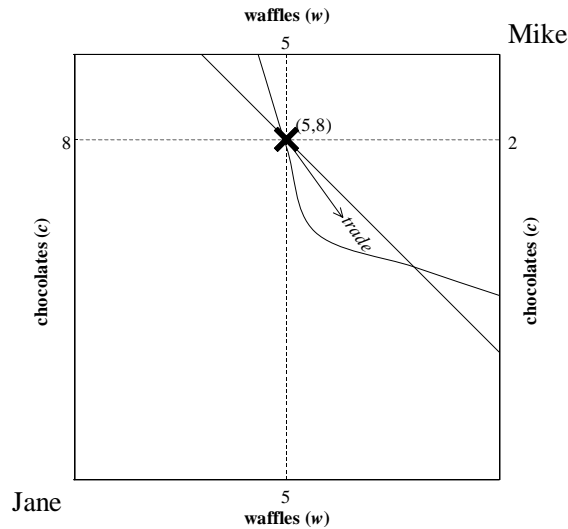
- b. Determine the MRS for both Mike and Jane, and evaluate them at the endowment point.

$$\begin{aligned}
 MRS_M &= \frac{MU_{c, \text{Mike}}}{MU_{w, \text{Mike}}} = \frac{1}{1} = 1 \\
 MRS_J &= \frac{MU_{c, \text{Jane}}}{MU_{w, \text{Jane}}} = \frac{\frac{1}{2} c_J^{-1/2} w_J^{1/2}}{\frac{1}{2} c_J^{1/2} w_J^{-1/2}} = \frac{w_J}{c_J} = \frac{5}{8}
 \end{aligned}$$

- c. Is the endowment point a Pareto optimal allocation? Explain.

No, it is not Pareto optimal, since $MRS_M = 1 \neq \frac{5}{8} = MRS_J$.

d. If they are willing to trade from the endowment point, in what direction will they trade? (In other words, who will give up which dessert in exchange for the other dessert?) If they are not willing to trade from the endowment point, why not? It might help you to sketch in Mike's and Jane's indifference curves at the endowment point, given the MRSes that you computed in part b.



- Jane and Mike will exchange chocolates and waffles at a rate $\frac{\Delta c}{\Delta w}$, wherein

$$MRS_J = \frac{5}{8} \leq \left| \frac{\Delta c}{\Delta w} \right| \leq 1 = MRS_M$$

- We can tell from the relative MRS values that Jane relatively prefers waffles to chocolates and Mike relatively prefers chocolates to waffles.
- Therefore, Jane will exchange some of her chocolates for Mike's waffles.