

## Marriage Theorem

Brad Pitt, Ben affleck, and Tobey Mcguire are marooned (abandoned) on a desert island with Jennifer Aniston, Jennifer Lopez and Reese Witherspoon. The “compatibility measures” in Table 2 indicate how much happiness each couple would experience if they spent all their time together. The happiness earned by a couple is proportional to the fraction of time they spent together. For example, if Ben and JLo spend half of their time together, they earn happiness of  $(1/2)(9) = 4.5$ .

Table 2

	Aniston	Lopez	Witherspoon
Pitt	7	5	2
Affleck	7	9	8
Mcguire	5	6	7

- (a) The goal of the six people is to maximize their total happiness on the island. Formulate this problem as a LP.
- (b) Argue (without providing a formal proof) that the optimal solution to the LP in (a) will imply that each person spends all his/her time with one person of the opposite sex.