

PROBLEM SET 2

1. From Osborne's book: 387.2, 387.5, 388.2.
2. Let $(N, \{S_i\}, \{u_i\})$ be a normal-form game.
 - (a) Prove that a pure strategy s_i is dominated if and only if there is a mixed strategy $\bar{\sigma}_i$ such that

$$u_i(s_i, s_{-i}) < u_i(\bar{\sigma}_i, s_{-i}),$$
 for all s_{-i} .
 - (b) Show with an example that the previous claim is not true when $\bar{\sigma}_i$ is restricted to being a pure strategy.
 - (c) Prove that if σ_i is dominant then the support of σ_i has only one element. So actually σ_i is a pure strategy.
 - (d) Prove that σ_i is a best response to μ iff the pure strategy s_i is a best response to μ , for all s_i in the support of σ_i .
3. Find the set of strategies that survive iterated elimination of strictly dominated strategies in games 1 and 2.

		Player 2	
		Here	There
Player 1	You	2, 0	2, 0
	Me	3, 0	0, 1
	Them	0, 1	3, 0

Game 1:

		Player 2		
		<i>L</i>	<i>M</i>	<i>R</i>
Player 1	<i>UU</i>	1, 1	1, 0	5, 2
	<i>UM</i>	0, 0	4, 0	1, 1
	<i>DM</i>	3, 1	1, 2	1, 3
	<i>DD</i>	1, 3	2, 0	2, 0

Game 2:

4. From Osborne's book: 31.1, 34.1, 34.2, 34.3, 68.1, 118.1, 118.3, 139.1, 142.1.