

**Game Theory Day 4
Homework**

Please complete on a separate piece of paper.

1. In the following game, find all cases of dominance among Rose strategies and among Colin strategies.

Rose\Colin	A	B	C	D
A	3	-6	2	-4
B	2	1	0	1
C	-4	3	-5	4

2. Rewrite the matrix game in #1 to reflect the utility payoffs for Colin.
3. The Dominance Principle can be extended to the Principle of Higher Order Dominance. The idea is that we first cross out any dominated strategies for Rose and for Colin. In the resulting smaller game, some strategies may be dominated even though they were not in the original game. Cross them out too. Look at the new smaller game and continue until no new dominance appears. The Principle for Higher Order Dominance says that players should play only strategies which survive this multi-stage process. Sometimes this principle can simplify a game enormously. In the following game, which strategies are admissible by the Principle of Higher Order Dominance?

Rose\Colin	A	B	C	D	E
A	1	1	1	2	2
B	2	1	1	1	2
C	2	2	1	1	1
D	2	2	2	1	0

4. Find two real-world examples of game situations between two players in which player 1 gains if and only if player 2 loses. Are your examples zero-sum (or constant-sum) games? Explain.