Answers to Problem Set 1: Static Game Theory

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1. Chicken

	lose face	fight
lose face	6,6	2*,7*
fight	7*,2*	0,0

No strategies are dominated weakly or strictly. The reaction functions are marked in the payoff matrix.

2. First Price Auction

Seagull = row player, VandeCamp = column player

	0	500	1000	10000	20000	25000
0	10000,500*	0,500*	0,0	0,-9000	0*,-19000	0*,-24000
500	19500*,0	9750,250*	0,0	0,-9000	0*,-19000	0*,-24000
1000	19000,0*	19000*,0*	9500,0*	0,-9000	0*,-19000	0*,-24000
10000	10000,0*	10000,0*	10000*,0*	5000*,-4500	0*,-19000	0*,-24000
20000	0,0*	0,0*	0,0*	0,0*	0*,-9500	0*,-24000
25000	-5000,0*	-5000,0*	-5000,0*	-5000,0*	-5000,0*	-2500,-12000

row player: 25000 is strictly dominated; 0 and 20000 are weakly dominated

column player: -25000 is strictly dominated, 0, 20000, 10000 and 1000 are all weakly dominated

game after elimination of weakly dominated strategies

	500
500	9750,250
1000	19000,0
10000	10000,0

for row player 500 and 10000 are strictly dominated, so we conclude that the column player bids 500, and the row player bids 1000. So the row player wins and gets 19000.

For best responses correspondences, see the payoff matrix.

3. Dominance and Pareto Dominance

	1	0
1	x,x	x-2,2
0	2,x-2	0,0

When x=1 this is an ordinary Prisoner's Dilemma. 1,1 Pareto dominates 0,0, and no other strategy Pareto dominates any other. Providing no effort strictly dominates providing effort, so the unique dominant strategy equilibrium is 0,0.

When x=3 the outcome 3,3 Pareto dominates all other outcomes, and the outcomes 1,2 and 2,1 both Pareto dominate 0,0. Providing effort strictly dominates not providing effort, so the unique dominant strategy equilibrium is 3,3.