

**Problem Set 4**  
**PS 2703**  
**Due October 1, 2007**

**Provide full explanations for your answers (e.g. provide proofs or sketches of proofs where appropriate).**

1. Osborne, Exercise 44.1 (Contributing to a public good)
2. For each of the games below, find the set of Nash equilibria and the set of action profiles surviving the iterated deletion of strictly dominated strategies. Is one a subset of the other?

a.

	d	e	f
a	3, 0	1, 1	2, 2
b	2, 1	3, 2	4, 1
c	1, 2	2, 1	3, 4

b.

	g	h	i	j
w	1,2	1,3	2,1	5,1
x	4,2	2,4	3,4	4,3
y	3,2	2,3	4,5	2,2
z	3,2	1,2	2,2	1,4

c.

	y <sub>1</sub>	y <sub>2</sub>	y <sub>3</sub>	y <sub>4</sub>
x <sub>1</sub>	3, 1	-2, 0	2, 1	3, 2
x <sub>2</sub>	4, 0	5, 2	1, 3	3, 1
x <sub>3</sub>	1, 4	6, -2	-1, -1	-2, 2
x <sub>4</sub>	5, 7	-1, 3	1, 5	2, 8

3. An action is *weakly dominant* if it weakly dominates each of the player's other actions. Prove that if player  $i$  has two weakly dominant actions,  $a_i$  and  $a_i'$ , then for any action choices by his opponents  $a_{-i}$ , his actions  $a_i$  and  $a_i'$  must yield the same payoffs.
4. Osborne, Exercise 74.1 (Electoral competition with three candidates)
5. Osborne, Exercise 75.3 (Electoral competition for more general preferences)