

EVOLUTION AND THE THEORY OF GAMES

Exercises 7-2-2013

4. (4 points) Find all Nash equilibria (mixed and pure) of the Hawk-Dove game for $R > C$ and for $R < C$:

	H	D
H	$(R - C)/2, (R - C)/2$	$R, 0$
D	$0, R$	$R/2, R/2$

5. (4 points) Suppose that (\hat{x}, \hat{y}) is a Nash equilibrium. Show that $\pi_1(x, \hat{y}) = \pi_1(\hat{x}, \hat{y})$ for every pure strategy x in the support of \hat{x} .
6. (4 points) Show that every dominating strategy solution is a Nash equilibrium, but that the reverse is not necessarily true.
7. (4 points) Show that if $x \in \mathbb{X}$ is a *strictly* dominated pure strategy and $(\hat{x}, \hat{y}) \in \mathbb{X} \times \mathbb{Y}$ is a Nash equilibrium, then x cannot be in the support of \hat{x} . Show that this conclusion need not be true if x is only *weakly* dominated. To show the latter, use the payoff matrix

	y_1	y_2	y_3
x_1	$3, 2$	$3, 0$	$2, 2$
x_2	$1, 0$	$3, 3$	$0, 3$
x_3	$0, 2$	$0, 0$	$3, 2$