Beauty of Mathematics Decal PSET #11

Due 11/29

Find all (pure strategy) equilibria in the following games. (The first player's strategies are listed along the top, and their payoffs shown first; the second player's strategies are shown on the left, and their payoffs shown second.)

1. Stag Hunt: Two hunters set out. Each must choose independently to hunt a stag or hunt a rabbit. Each hunter can catch a rabbit by himself. However, they must cooperate in order to catch a stag; if only one chooses to hunt a stag, that hunter will fail.

	Stag	Rabbit
Stag	4, 4	1, 0
Rabbit	0, 1	1, 1

2. Chicken: Two hooligans drive cars towards each other. They will crash into each other unless one or both swerves; but if only one swerves then the one who did is shamed.

	Straight	Swerve
Straight	-10, -10	-1, 1
Swerve	1, -1	0, 0

3. Prisoner's Dilemma: A prosecutor has a pair of prisoners, each suspected of the same two crimes. The lesser crime carries a sentence of 1 year, and the greater crime carries a sentence of 3 years. The prosecutor expects that each prisoner would be convicted of the lesser crime; but for either to be convicted of the greater crime, the other prisoner would have to testify against them. The prosecutor offers each prisoner to reduce their sentence by a year if they testify against the other. The prisoners are kept separate in order that they can't communicate, so they must independently decide whether to stay silent (cooperate) or rat the other out (defect).

	Cooperate	Defect
Cooperate	-1, -1	0, -3
Defect	-3, 0	-2, -2