Collaboration on homework is encouraged, but individually written solutions are required. Also, please name all collaborators and sources of information on each assignment; any such named source may be used.

(1) *Subgame perfect equilibria.*  
(a) 10 points. Find a subgame perfect equilibrium of the dollar auction extensive form game, as described in section 2.9 of the lecture notes.

(b) 10 points. Find an equilibrium of the centipede game for $n \geq 5$ that is not subgame perfect.

(2) *Equilibria in strategic form games.* Find all the equilibria in the following games, which are described in the lecture notes.

(a) 10 points. Prisoner’s dilemma.

(b) 10 points. Stag hunt.

(c) 10 points. Bertrand competition.

(d) 10 points. Public goods.

(e) 10 points. Voter turnout when $N^a$ and $N^b$ are the same size.

(f) 10 points. Voter turnout when $N^a$ is larger than $N^b$.

(3) *Cournot competition.* The Cournot competition game is described in the lecture notes.

(a) 20 points. Find a symmetric pure Nash equilibrium of the Cournot competition game, as described in Exercise 3.9 of the lecture notes.