## Stat 155 Fall 2009: Homework 5

Due November 5, 2009

- Please show all your steps. No credit will be given for just giving the answer, without any supporting work.
- Grading: 3 points for a complete solution, 2 points for an almost correct solution, 1 point for some correct work, 0 otherwise
- 1. Consider the following asymmetrical mating game described in the book *The Selfish Gene* by Richard Dawkins (1976), in which a female (say, a bird) tries to get a male to stay around and help raise a family of babies, instead of going off and propagating his genes elsewhere. One possible technique for doing this is to insist on a long and ardous courtship before mating. Suppose that a female can be either *coy* (insist on courtship) or *fast* (be willing to mate with anyone), and a male can either be *faithful* (go through a courtship, and then help raise the babies), or *philandering* (be unwilling to go through a courtship, and desert any female after mating). Suppose that the payoff to each parent of babies is +15, and the total cost of raising babies is -20, which can be split equally between both parents, or fall entirely on the female (if the male deserts). Suppose that the cost of long courtship is -3 to each player. Set up the payoff matrix and find an ESS for the males.
- 2. Problem 4.4, page 108, from Game Theory, Alive
- 3. Problem 4.9, page 109, from Game Theory, Alive