Math 167: Mathematical Game Theory – Homework 4

Due: February 3, 2017

Exercise 1 (Rock-paper-scissors)**.**

Consider the game *rock-paper-scissors* (see for instance here if you are not familiar with it). Explain why is this a 2-person zero-sum game. Determine the pure strategies of each players. Write the payoff matrix and the expected payoff function in terms of the mixed strategies of the players. Determine the optimal mixed strategies for both players with justification. Explain the result that you have obtained!

Exercise 2 (Technique of domination)**.**

Read and understand the *technique of domination* in the framework of the game *plus one* (page 39 in the book of Karlin and Peres). This is very useful, when one is faced with large payoff matrices. Then find the optimal mixed strategies for both players using the smaller payoff matrix displayed on the page 40.

Exercise 3.

Exercise 2.4 from the book of Karlin and Peres (page 50).

Exercise 4.

Exercise 2.5 from the book of Karlin and Peres (page 50).

Exercise 5.

Exercise 2.7 from the book of Karlin and Peres (page 51).