

## Homework 6 Due day: April 28

All solutions should be typed, using Latex preferably. Briefly explain the correctness and complexity of your solution.

- (1) Chapter 11, 1
- (2) Chapter 11, 6
- (3) Chapter 11, 8
- (4) Adversary supplement one: 5.19
- (5) In Stan Smith group of 2015 ATP world tour finals, there are four players Federer (F), Djokovic (D), Berdych (B), and Nishikori (N). In the round-robin meetings, suppose Federer beats Berdych (denoted as  $F \rightarrow B$ ),  $D \rightarrow N$ ,  $N \rightarrow B$ ,  $F \rightarrow D$ ,  $N \rightarrow F$  (\*), and  $D \rightarrow B$ . (\*: the actual result was the opposite.)
  - a. Find all the kings in the group tournament.
  - b. Find all the sorted sequence of kings in the group tournament.
  - c. Prove that for any round-robin tournament, there is at least one king and one sorted sequence of kings.