Homework 7

CS 4104 (Spring 2017)

Assigned on April 24, 2017.
Submit PDF solutions on Canvas by the
beginning of class on May 1, 2018.

Instructions:

For these problems, please describe the reduction as clearly as you can and make you sure you prove the correctness of the reduction in both directions, as we have discussed in class.

Problem 1 (20 points) Solve exercise 1 in Chapter 8 (page 505) of your textbook.

Problem 2 (30 points) Solve exercise 3 in Chapter 8 (pages 505–506) of your textbook.

Problem 3 (50 points = 25 + 25 points) Solve exercise 19 in Chapter 8 (pages 514–515) of your textbook. *Hint:* You can reduce 3-colouring to one problem (I am not saying which) and the other problem to network flow.

Problem 4 (**Extra credit**: 30 points) Solve exercise 6 in Chapter 8 (page 507) of your textbook. *Hint:* think of monotone satisfiability as a covering problem: you have to find a small number of Boolean variables that together satisfy or "cover" all the clauses.