

# CSE548/AMS542 Fall 2007 Analysis of Algorithms

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Due the second class in the week of Sep 17-21. Each problem (including the extra credit problem) has a maximum of 10 points. (i) You write down the solution clearly. If we can not recognize your writing then you may lose points. (ii) Avoid too many details. A succinct and clean proof is the best. You may use the algorithms we covered in class without referring to the details. (iii) If you discuss some of the problems with other fellow students (at most 3 students per group), write down their names and the problems. If you consult any books/webpages, cite them.

## Homework 1

1. Textbook (Kleinberg & Tardos), page 67: exercise 4, 5, 6, 8.
2. Textbook (Kleinberg & Tardos), page 107: exercise 4, 6, 7, 9, 10.
3. Prove claim (3.2) on page 78.

Let  $G$  be an undirected graph on  $n$  nodes. Prove that any two of the following statements implies the third.

- (a)  $G$  is connected;
  - (b)  $G$  does not contain a cycle;
  - (c)  $G$  has  $n - 1$  edges.
4. (Extra credit) Textbook (Kleinberg & Tardos), page 107: exercise 8.

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