

CSE548/AMS542 Fall 2007 Analysis of Algorithms

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Due in class on Wednesday, Nov. 21st. 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 5

1. Textbook (Kleinberg & Tardos), page 416, problem 4, 5, 11, 12, 15, 18, 24.
2. Show that a maximum flow in a network $G = (V, E)$ can always be found by a sequence of at most $|E|$ augmenting paths. (Hint: Determine the paths after finding the flow.)
3. Suppose that a flow network $G = (V, E)$ has symmetric edges, that is, $(u, v) \in E$ if and only if $(v, u) \in E$. Show that the Edmonds-Karp algorithm terminates after at most $nm/4$ iterations, $n = |V|$, $m = |E|$.
4. (Extra credit) (Kleinberg & Tardos), page 335, problem 29.
5. (Extra credit) (Kleinberg & Tardos), page 424, problem 17.

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