

# Quiz 7

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**This quiz does not count towards your grade.** It exists to simply gauge your understanding. Treat this as though it were a portion of your midterm or final exam. "Intuition Practice" might be tricky; watch out for subtleties. "Proofs" will be challenging to start; develop an arsenal of *approaches* to starting a problem.

## 1 Intuition Practice

The following covers various topics for the midterm.

1. In all stable pairings, at least one man is paired with a woman in the first half of his preference list.
2. Any graph with an Eulerian tour has at least  $|V| - 1$  edges.
3. Among any three vertices  $(u, v, w)$  in a hypercube, there are *exactly*  $2^a + 2^b$  paths connecting them, where all paths between  $u$  and  $v$  are of length  $a$  and all paths between  $v$  and  $w$  are of length  $b$ .