

MATH1061/MATH7861 Mid-semester Test 2 Information

Date: Friday 10 October 2003

Time: 10am - 11am (55 minutes with 5 minutes perusal)

Place: Rooms 12-112 and 12-113

There are 45 marks allocated on the paper. This is roughly 1 mark per minute with 10 extra minutes. A one-sided, handwritten, A4 page of notes is allowed. Pocket calculators are allowed.

- Q1. Prove a statement by mathematical induction. The statement will involve a sum written in summation notation.
- Q2. True or False: eight statements about sets.
- Q3. Given two sets A and B , prove that $B \subseteq A$.
- Q4. Five short answer questions about sets.
- Q5. Illustrate a set property using Venn diagrams.
- Q6. A question about bipartite graphs and subgraphs.
- Q7. True or False: six statements about walks, paths and circuits.
- Q8. A question about the degrees of vertices in a tree.
- Q9. Given a relation as a set of ordered pairs, determine whether the relation is reflexive, symmetric, anti-symmetric, transitive, an equivalence relation, a partial order, and/or a total order. No formal proofs are required here but you need to be able to give a brief (one sentence) reason for your answers.
- Q10. Given a relation described as $m R n$ if, and only if, some condition involving m and n is true, determine whether the relation is reflexive, symmetric and/or transitive. In each case you will be asked to either prove that it is, or give a counterexample to show that it is not.

The timetable for 10 October will be:

10:00 - 11:00	Test
11:00 - 11:15	Break
11:15 - 12:00	Lecture
12:00 - 12:15	Break
12:15 - 12:50	Lecture