

Last name _____

First name _____

LARSON—MATH 356—CLASSROOM WORKSHEET 14
Euler tours, Euler trails and Hamilton cycles

Reminders

1. Remember to email your Notes/Classroom Worksheet.
2. Homework #8 (*h08*, Test 2 Review) is due Wednesday.
3. Test 2 is on Thursday.

Concepts & Notation

- Sec. 4.1: Euler tours, Hamiltonian cycle.

Review

1. How many spanning trees are there of the complete graph K_n (How many different Prufer codes are there for a tree with ν vertices; and equivalently, how many labeled trees are there with ν vertices)?
2. What is an *Euler tour* in a graph?
3. What is a necessary condition for a connected graph to have an Euler circuit?
4. Is this also a sufficient condition?
5. Can we use this condition to develop a test for whether a (connected) graph is Eulerian?
6. We also used the proof idea for the sufficient condition to design our algorithm to *find* a Euler tour in an Eulerian graph.

Notes

1. What is an *Euler trail*?
2. When does a graph have an Euler trail?
3. What is a Hamilton cycle? What is a Hamiltonian graph?
4. What is an obvious algorithm for testing if a graph has a Hamilton cycle?
5. What is an obvious *necessary condition* for a graph to be Hamiltonian?
6. Can a Hamiltonian graph have a cut vertex?
7. (**Dirac's Theorem**). If the minimum degree of a graph G is at least half the order ($\delta \geq \frac{n}{2}$) then G is Hamiltonian.