

**Math 428, Section 1, Summer 2004**  
**Homework Assignment 3**  
**Due Tuesday, June 22, 2004**

Please write out your solutions to the problems below on one or more separate sheets of paper. Write neatly and in a well-organized fashion. Write in clear, complete sentences, using diagrams and equations where appropriate.

Do the following problems from the book:

13.2

13.5

13.7

14.2

15.3 (refer to Section 3 for the definition of a wheel)

15.6 part i

15.10 part i

17.2

17.6 (hint: adjacency matrices)

17.8

**EXTRA CREDIT PROBLEMS:**

13.10

14.6

E1. Suppose  $G$  is a 2-connected planar graph. Prove that its dual  $G^*$  is also 2-connected.

E2. Suppose  $G$  is a planar graph on  $n$  vertices and that  $n \geq 4$ . Prove that  $G$  contains at least four vertices of degree at most 5.