WRITTEN ASSIGNMENT # 11
MATH 38
DUE: FRIDAY 29, 2005

Read Section 3.1

1. Is it possible to decompose the Petersen graph into 3 perfect matchings?

2. What can you say about perfect matchings in complete graphs? In particular how many different perfect matchings are there?

3. What is the difference between maximum and maximal matchings? Draw a graph and show a maximum and maximal matchings that are not equal.

4. What are M-augmenting paths and why are we interested in them?

5. What is the symmetric difference of K_n and any graph G with the same vertex set?

6. What graphs occur as the symmetric difference of two matchings?

7. What is a characterization of maximum matchings in a graph G?

8. State Hall's Theorem. How does it follow from Hall's Theorem that if G is k-regular $(k > 0)$ then G has a perfect matching?

9. How can we use Hall's theorem to prove that a bipartite graph does not have a matching that saturates one of its partite sets?

10. In chapter one we defined an independent set, is there a relationship between matchings and independent sets?