Math 3012 A1
Test 3
November 19, 2001

Please write legibly, and answers without explanation are not acceptable.

1. (6) Find all non-isomorphic simple graphs on 4 vertices.

2. (4) Let G be the graph given below.
   a. Find the number of spanning subgraphs in G.
   b. Find the number of spanning subgraphs of G containing no cycles.

   (Sorry, I don't know what the graph sown was. Ask Professor Yu!)

3. (4) Find the chromatic polynomial of the graph described below, and find the number of proper colorings with 5 colors.

   (See number 2!)

4. (10) Let G be the simple graph with degree sequence 6,6,6,6,6,6,7,7,7,7,7,7. Determine the number of edges in G. Does G contain a Hamiltonian cycle? Is G connected? Does G have an eulerian circuit? Is G planar? Explain your answers.

5. (6) Determine whether the following graphs are planar (by finding a plane representation or by finding a subdivision of $K_{3,3}$ or K_5.)

   (See number 2!)