GRAPH THEORY: PROBLEM SET 3

Please hand in following problems below. If you have any questions, please feel free to ask me after class or during office hour.

Homework 2 dues on Thursday June 12th.

Problems from the book: 4.6,4.15,4.23,4.28,4.34.

Also do the problems below:

1) (The Petersen graph) Let $S = 1, 2, 3, 4, 5$. Consider the graph G whose vertex set is the set of subsets of size 2. For example, 1,2 and 3,5 are typical vertices. Write out the whole vertex set V(G) (there are 10 elements). The Petersen graph is the graph on this vertex set in which i,j and k,l are adjacent vertices if and only if they are disjoint sets; thus 1,2 and 3,4 are adjacent but 1,2 and 2,3 are not.

Show that the degree of each vertex is 3 and figure out from this the total number of edges. Write out the edge set $E(G)$ and draw the Petersen graph on the plane.

2) Find the Prufer code for the labeled tree:

3) Construct labeled trees with the Prufer codes (5,5,8,3,3,1) and (1,2,3,2,7,10,4,5).

Date: June 3, 2008.