

Math 412**HW5**

Due February 25, 2009

Solve five of the next six problems.

1. # 2.1.53 in the book.
2. # 2.1.56 in the book.
3. Using the Prüfer correspondence, for $n \geq 5$, count the cardinalities of the following sets of trees with vertex set $[n]$:
 - (a) trees that have exactly three leaves;
 - (b) trees that have $n - 3$ leaves and exactly one vertex of degree at least 3.
4. Using Cayley's Formula, find the number of spanning trees in the graph obtained from K_n by adding an edge. (Hint: cf. Problem 2.2.7 in the book.)
5. # 2.2.18 in the book.
6. Use Prim's Algorithm and Kruskal's Algorithm to find minimum spanning trees in the weighted graph on the other side of this sheet (show the sequence in which edges are added).

Problems below review basic concepts and their ideas could be used in the tests.

WARMUP PROBLEMS: Section 2.1: # 13, 14, 15. Section 2.2: # 1, 2, 3. Do not write these up!

OTHER INTERESTING PROBLEMS: Section 2.1: # 35, 44, 47, 52, 55. Section 2.2: # 6, 8, 10, 12, 17. Do not write these up!

