

NDMI011: Combinatorics and Graph Theory 1

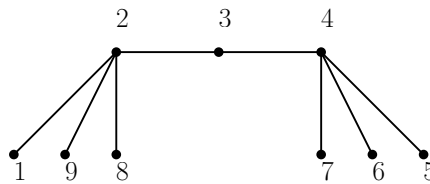
Tutorial #6

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Exercise 1.

(a) Find the Prüfer code of the tree below.



(b) Find the tree on the vertex set $\{1, \dots, 7\}$, whose Prüfer code is 3, 3, 7, 4, 3.

Exercise 2. Using determinants, compute the number of spanning trees of complete bipartite graph $K_{m,n}$.

Exercise 3. Let $n, t \in \mathbb{N}$, with $t \geq 2$. Prove that any n -vertex graph that does not contain the complete bipartite graph $K_{2,t}$ as a subgraph has at most $\frac{1}{2}(n + n^{3/2}\sqrt{t-1})$ edges.

Hint: Imitate the proof of Theorem 2.1 from Lecture Notes 9. (Note that $C_4 = K_{2,2}$.) If you define M the same way as in that proof, you should get a different upper bound for $|M|$. Now work with that upper bound.