

Exercises 1

Exercise 1:

Prove that for each graph G the inequality $\tau(G) \leq 2\nu(G)$ holds and the inequality is sharp.

(4 points)

Exercise 2:

Let G be a graph and M_1, M_2 two maximal matchings in G . Prove that $|M_1| \leq 2|M_2|$.

(4 points)

Exercise 3:

Let G be a bipartite graph such that for each proper subset $F \subset E(G)$ and $G' := (V(G), F)$ we have $\tau(G') < \tau(G)$. Prove: $E(G)$ is a matching.

(4 points)

Exercise 4:

Prove that a k -regular bipartite graph has k disjoint perfect matchings. Deduce from this that the edge set of a bipartite graph of maximum degree k can be partitioned into k matchings.

(4 points)

Deadline: Tuesday, October 19th, before the lecture.

First exercise class: Thursday 21st 16:00 - 17:30 s.t. (Seminarraum, 1st floor)