

Effiziente Algorithmen II

10. Übungsblatt WS 05/06

Abgabetermin: 30.01.06

Aufgabe 47

Let K_{2n} be a complete graph with vertex set $V(G) = \{v_0, v_1, \dots, v_{2n-1}\}$. Divide the edge set into subsets F_i for $i = 1, 2, \dots, 2n - 1$, where

$$F_i = \{v_0v_i\} \cup \{v_jv_k \mid j + k \equiv 2i \pmod{2n-1}\}.$$

Show that the F_i form a factorization of K_{2n} .

Aufgabe 48

A graph G of order $n = 2k$ is 1-factorable iff G is kK_2 -factorable.

Aufgabe 49

Prove that the cycle C_n is graceful iff $n \equiv 0 \pmod{4}$ or $n \equiv 3 \pmod{4}$.

Aufgabe 50

Prove that every nontrivial path is graceful. Apply the proof for P_6 and P_9 .

Aufgabe 51

Prove that every complete bipartite graph is graceful.