

Graphs & Algorithms II

Exercise Set 12

HS07

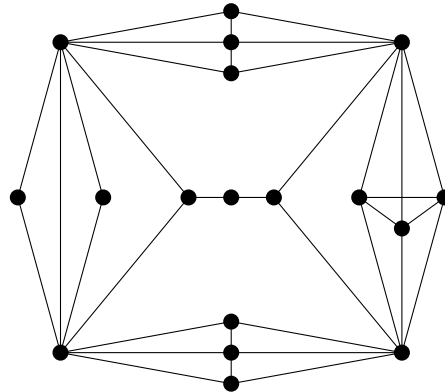
URL: <http://www.ti.inf.ethz.ch/ew/courses/GA07/>

Homework 12

Prove that every 3-regular simple graph with no cut-edge decomposes into copies of P_4 , the path on four vertices.

Exercise 33

Exhibit a maximum matching in the graph shown below, and give a short proof that there is no larger matching.



Exercise 34

Let G be a bipartite graph with partite sets X and Y . Prove that $\alpha'(G) = |X|$ or there exists a set $S \subseteq X$ such that $\alpha'(G) = |X| - |S| + |N(S)|$, where $\alpha'(G)$ denotes the size of a maximum matching in G .

Exercise 35

Let G be a connected graph on an even number of vertices. Show that if G does not contain $K_{1,3}$ as an induced subgraph then G has a perfect matching.