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Graphs & Algorithms II — Exercise Set 3 — HS07

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

Exercise 7

a) Give an embedding of K_6 in the real projective plane.

b) Give an embedding of K_7 on the Torus.

Exercise 8

Prove Wagner's Theorem: A graph is planar if and only if it does not contain K_5 or $K_{3,3}$ as a minor.

Exercise 9

Show that outerplanar graphs have treewidth at most two.

Homework 3

A tree decomposition $(\{X_i \mid i \in I\}, T = (I, F))$ of width k is called smooth if

- $|X_i| = k + 1$ for all $i \in I$;
- $|X_i \cap X_j| = k$ for all $\{i, j\} \in F$.

Show that for any graph with treewidth k there is a smooth tree decomposition of width k.

Homework due: 17.10.2007, 11:00AM.