Graph Theory: Lecture No. 17

L. Sunil Chandran

Computer Science and Automation,
Indian Institute of Science, Bangalore
Email: sunil@csa.iisc.ernet.in

A planar graph is 6-colorable.

A planar graph is 5-colorable.

Kuratowsky's Theorem: The following assertions are equivalent for graphs G:

(1) G is planar

(2) G contains neither K_5 nor $K_{3,3}$ as a topological minor.

(3) G contains neither $K_{3,3}$ or K_5 as a minor

If $\Delta(X) \leq 3$ then every MX contains a TX. Thus every minor with maximum degree at most 3 is also its topological minor.

A graph contains K_5 or $K_{3,3}$ as a minor if and only if it contains K_5 or $K_{3,3}$ as a topological minor.

In a 2-connected plane graph, every face is bounded by a cycle.