Planar Graphs

Planar graphs are graphs that can be imbedded in a plane (Chudnovsky & Haran, 2019). This constraint on their structure makes them very interesting to study.

Here are a few theorems about planar graphs:

Fáry’s Theorem states that any planar graph can be drawn without edge crossings such that its edges are straight lines (Chudnovsky & Haran, 2019).

The Four Colour Theorem states that every planar graph has a chromatic number less than or equal to four (Trudeau, 1993).

Kuratowski’s Theorem states that a graph is planar if and only if it has no subgraphs that are subdivisions of extensions of the complete graph of five vertices or the utility graph (Chudnovsky & Haran, 2019).

Examples of planar graphs include:

* All path, cyclic and wheel graphs.
* Complete graphs with four vertices or less.

Resources

Chudnovsky, M., Haran, B.J. (11/09/2019). Planar Graphs - Numberphile Princeton University: Numberphile. <https://www.youtube.com/watch?v=xBkTIp6ajAg>

Trudeau, R.J. (Rev. ed. Dots and lines, 1976). (1993). *Planar Graphs*. Introduction to graph theory. New York: Dover Publications, INC.