Graph Theory: Lecture No. 22

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Colouring of Digraphs: Gallai-Roy Theorem: Every digraph D contains a directed path with χ vertices.

Acyclic Vertex Coloring: Color the vertices of G such that the coloring is proper and there exists no bichromatic cycles. The minimum number of colors required is known as the acyclic chromatic number, denoted as $a(G)$.

Acyclic Edge Coloring: Color the edges of the graph such that it is proper and there exists no bichromatic cycles. The minimum number of colors required to achieve such a coloring is known as the acyclic chromatic index $a'(G)$.

Every k-chromatic graph has a K_k minor.

A stronger Conjecture was proposed by G. Hajós, namely every k-chromatic graph has a subdivision of K_k. But this conjecture was disproved by Catlin.