Gutner, Shai; Tarsi, Michael
Some results on $(a:b)$-choosability. (English) Zbl 1198.05049
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Summary: A solution to a problem of *P. Erdős*, *A.L. Rubin*, and *H. Taylor* ["Choosability in graphs," Combinatorics, graph theory and computing, Proc. West Coast Conf., Arcata/Calif. 1979, 125–157 (1980; Zbl 0469.05032)] is obtained by showing that if a graph G is $(a:b)$-choosable, and $c/d > a/b$, then G is not necessarily $(c:d)$-choosable. Applying probabilistic methods, an upper bound for the kth choice number of a graph is given. We also prove that a directed graph with maximum outdegree d and no odd directed cycle is $(k(d+1):k)$-choosable for every $k \geq 1$. Other results presented in this article are related to the strong choice number of graphs (a generalization of the strong chromatic number). We conclude with complexity analysis of some decision problems related to graph choosability.

MSC:

05C15 Coloring of graphs and hypergraphs

Keywords:

(a:b)-choosability; probabilistic methods; complexity of graph choosability; k-th choice number of a graph; list-chromatic conjecture; strong chromatic number

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