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Erdős, Pál; Gallai, Tibor

Solution of a problem of Dirac (In English)

Theory Graphs Appl., Proc. Symp. Smolenice 1963, 167-168 (1964).

We quote the authors. "In a graph-theoretic colloquium at Smolenice, *G.A.Dirac* conjectured (see ibid. p. 167 problem 5) that the chromatic number of a proper regular subgraph of a complete n-gon is $\leq 3n/5$. We shall prove this conjecture. In fact we shall prove the following theorem ($G^{(n)}$ always denotes a graph with n vertices). Theorem. Let $G^{(n)}$ be a regular graph of valence $r < n-1$ and chromatic number k. Then $k \leq 3n/5$, with equality if and only if the components of the complementary graph $\overline{G^{(n)}}$ of $G^{(n)}$ are pentagons."

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Classification:

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