Small Ramsey Numbers

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ABSTRACT: We present data which, to the best of our knowledge, includes all known nontrivial values and bounds for specific graph, hypergraph and multicolor Ramsey numbers, where the avoided graphs are complete or complete without one edge. Many results pertaining to other more studied cases are also presented. We give references to all cited bounds and values, as well as to previous similar compilations. We do not attempt complete coverage of asymptotic behavior of Ramsey numbers, but concentrate on their specific values.

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Table V. Known Ramsey numbers $R(C_n, K_m)$, results from unpublished manuscripts are marked with a *.
The Ramsey number for a cycle of length five vs. a complete graph of order six

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Abstract
It has been conjectured that \( r(C_m, K_n) = (m - 1)(n - 1) + 1 \) for all \( m \geq n \geq 4 \). This has been proved recently for \( n = 4 \) and \( n = 5 \). In this paper, we prove that \( r(C_5, K_6) = 21 \). This raises the possibility that \( r(C_m, K_6) = 5m - 4 \) for all \( m \geq 5 \). © 2000 John Wiley & Sons, Inc. J Graph Theory 35: 99-108, 2000

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On cycle - Complete graph ramsey numbers

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ABSTRACT

A new upper bound is given for the cycle-complete graph Ramsey number \( r(C_m, K_n) \), the smallest order for a graph which forces it to contain either a cycle of order \( m \) or a set of \( n \) independent vertices. Then, another cycle-complete graph Ramsey number is studied, namely \( r(\leq C_m, K_n) \) the smallest order for a graph which forces it to contain either a cycle of order \( i \) for some \( i \) satisfying \( 3 \leq i \leq m \) or a set of \( n \) independent vertices. We obtain the exact value of \( r(\leq C_m, K_n) \) for all \( m > n \) and an upper bound which applies when \( m \) is large in comparison with \( n \).

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