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Ramsey theorems for multiple copies of graphs. (In English)

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If G and H are graphs, define the “Ramsey number” $r(G, H)$ to be the least number p such that if the edges of the complete graph K_p are colored red and blue (say), either the red graph contains G as a subgraph or the blue graph contains H . Let mG denote the union of m disjoint copies of G . The following result is proved: Let G and H have k and l points respectively and have point independence numbers of i and j respectively. Then $N - 1 \leq r(mG, nH) \leq N + C$, where $N = km + ln - \min(mi, nj)$ and where C is an effectively computable function of G and H . The method used permits exact evaluation of $r(mG, nH)$ for various choices of G and H , especially when $m = n$ or $G = H$. In particular, $r(mK_3, nK_3) = 3m + 2n$ when $m \geq n$, $m \geq 2$.

Classification:

05C35 Extremal problems (graph theory)

05C15 Chromatic theory of graphs and maps