

ANOTHER VIEW OF BIPARTITE RAMSEY NUMBERS

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Abstract

For bipartite graphs F and H and a positive integer s , the s -bipartite Ramsey number $BR_s(F, H)$ of F and H is the smallest integer t with $t \geq s$ such that every red-blue coloring of $K_{s,t}$ results in a red F or a blue H . We evaluate this number for all positive integers s when $F = K_{2,2}$ and $H \in \{K_{2,3}, K_{3,3}\}$.

Keywords: Ramsey number, bipartite Ramsey number, s -bipartite Ramsey number.

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REFERENCES

- [1] E. Andrews, G. Chartrand, C. Lumduanhom and P. Zhang, *Stars and their k -Ramsey numbers*, *Graphs Combin.* **33** (2017) 257–274.
doi:10.1007/s00373-017-1756-9
- [2] L.W. Beineke and A.J. Schwenk, *On a bipartite form of the Ramsey problem*, in: *Proceedings of the Fifth British Combinatorial Conference* (Univ. Aberdeen, Aberdeen, 1975) 17–22.
- [3] Z. Bi, G. Chartrand and P. Zhang, *Party problems and Ramsey numbers*, preprint.
- [4] G. Chartrand and P. Zhang, *Chromatic Graph Theory* (Chapman & Hall/CRC Press, Boca Raton, FL, 2009).
- [5] T.P. Kirkman, *On a problem in combinatorics*, *Cambridge and Dublin Math. J.* **2** (1847) 191–204.

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