

1155-05-311

Linyuan Lu* (lu@math.sc.edu), Columbia, SC 29208, and **Joshua Thompson**
(joshuact@email.sc.edu), Columbia, SC 29208. *Poset Ramsey Numbers for Boolean Lattices.*

A subposet Q' of a poset Q is a *copy of a poset P* if there is a bijection f between elements of P and Q' such that $x \leq y$ in P iff $f(x) \leq f(y)$ in Q' . For posets P, P' , let the *poset Ramsey number* $R(P, P')$ be the smallest N such that no matter how the elements of the Boolean lattice Q_N are colored red and blue, there is a copy of P with all red elements or a copy of P' with all blue elements. Axenovich and Walzer introduced this concept in *Order* (2017), where they proved $R(Q_2, Q_n) \leq 2n + 2$ and $R(Q_n, Q_m) \leq mn + n + m$, where Q_n is the Boolean lattice of dimension n . They later proved $2n \leq R(Q_n, Q_n) \leq n^2 + 2n$. Walzer later proved $R(Q_n, Q_n) \leq n^2 + 1$. We provide some improved bounds for $R(Q_n, Q_m)$ for various $n, m \in \mathbb{N}$. In particular, we prove that $R(Q_n, Q_n) \leq n^2 - n + 2$, $R(Q_2, Q_n) \leq \frac{5}{3}n + 2$. (Received January 17, 2020)