

Choosability of Graph Powers

N. Kosar Š. Petříčková B. Reiniger E. Yeager

Abstract

Recently, Kim and Park have found an infinite family of graphs whose squares are not chromatic-choosable. Xuding Zhu asked whether there is some k such that all k th power graphs are chromatic-choosable. We answer this question in the negative. We show that there is a positive constant c such that for any k there is a family of graphs G with $\chi(G^k)$ unbounded and $\chi_\ell(G^k) \geq c\chi(G^k) \log \chi(G^k)$.