INDEPENDENCE NUMBER, CONNECTIVITY AND ALL FRACTIONAL \((a, b, k)\)-CRITICAL GRAPHS

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Abstract

Let \(G\) be a graph and \(a, b\) and \(k\) be nonnegative integers with \(1 \leq a \leq b\). A graph \(G\) is defined as all fractional \((a, b, k)\)-critical if after deleting any \(k\) vertices of \(G\), the remaining graph has all fractional \([a, b]\)-factors. In this paper, we prove that if \(\kappa(G) \geq \max\left\{\frac{(b+1)^2 + 2k}{2}, \frac{(b+1)^2 \alpha(G) + 4ak}{4a}\right\}\), then \(G\) is all fractional \((a, b, k)\)-critical. If \(k = 0\), we improve the result given in [Filomat 29 (2015) 757–761]. Moreover, we show that this result is best possible in some sense.

Keywords: independence number, connectivity, fractional \([a, b]\)-factor, fractional \((a, b, k)\)-critical graph, all fractional \((a, b, k)\)-critical graph.

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