CONNECTED DOMINATION CRITICAL GRAPHS WITH CUT VERTICES

Pawaton Kaemawichanurat
Theoretical and Computational Science Center
Science Laboratory Building and Department of Mathematics
Faculty of Science, King Mongkut’s University of Technology Thonburi, 126 Pracha Uthit Road, Bang Mod Thung Khru, Bangkok 10140, Thailand
e-mail: pawaton.kae@kmutt.ac.th

AND

Nawarat Ananchuen
Center of Excellence in Mathematics
CHE, Si Ayutthaya Rd., Bangkok 10400, Thailand
e-mail: nawarat.ana@mahidol.ac.th

Abstract
A graph $G$ is said to be $k$-$\gamma_c$-critical if the connected domination number of $G$, $\gamma_c(G)$, is $k$ and $\gamma_c(G + uv) < k$ for any pair of non-adjacent vertices $u$ and $v$ of $G$. Let $G$ be a $k$-$\gamma_c$-critical graph and $\zeta(G)$ the number of cut vertices of $G$. It was proved, in [1, 6], that, for $3 \leq k \leq 4$, every $k$-$\gamma_c$-critical graph satisfies $\zeta(G) \leq k - 2$. In this paper, we generalize that every $k$-$\gamma_c$-critical graph satisfies $\zeta(G) \leq k - 2$ for all $k \geq 5$. We also characterize all $k$-$\gamma_c$-critical graphs when $\zeta(G)$ is achieving the upper bound.

Keywords: connected domination, critical.

2010 Mathematics Subject Classification: 05C69.

References

doi:10.12988/imf.2007.07277


Received 12 December 2017
Revised 26 June 2018
Accepted 26 June 2018