


# Results on the domination number and the total domination number of Lucas cubes\*

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## Abstract

Lucas cubes are special subgraphs of Fibonacci cubes. For small dimensions, their domination numbers are obtained by direct search or integer linear programming. For larger dimensions some bounds on these numbers are given. In this work, we present the exact values of total domination number of small dimensional Lucas cubes and present optimization problems obtained from the degree information of Lucas cubes, whose solutions give better lower bounds on the domination numbers and total domination numbers of Lucas cubes.

*Keywords:* Lucas cube, Fibonacci cube, domination number, total domination number, integer linear programming.

*Math. Subj. Class.:* 05C69, 68R10, 11B39

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# Rezultati v zvezi z dominacijskim številom in totalnim dominacijskim številom Lucasovih kock\*

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## Povzetek

Lucasove kocke so posebni podgrafi Fibonaccijevih kock. Pri majhnih dimenzijah njihova dominacijska števila dobimo z neposrednim iskanjem ali pa s celoštevilskim linearnim programiranjem. Pri večjih dimenzijah so znane meje, v katerih se gibljejo ta števila. V tem članku predstavimo natančne vrednosti totalnega dominacijskega števila Lucasovih kock z majhnimi dimenzijami in predstavimo optimizacijske probleme, ki upoštevajo podatke o stopnjah Lucasovih kock, katerih rešitve dajejo boljše spodnje meje dominacijskih števil in totalnih dominacijskih števil Lucasovih kock.

*Ključne besede:* Lucasova kocka, Fibonaccijeva kocka, dominacijsko število, totalno dominacijsko število, celoštevilsko linearno programiranje.

*Math. Subj. Class.:* 05C69, 68R10, 11B39

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