POVZETEK:

V diplomski nalogi smo predstavili uporabo teorije grafov v linearni algebri. Predstavljena sta dva usmerjena grafa, to sta Königov usmerjeni graf in Coatesov usmerjeni graf.
Diplomska naloga je sestavljena iz dveh večjih delov. V prvem delu so definicije iz linearne algebre in teorije grafov, ki jih potrebujemo za razumevanje diplomske naloge, v drugem delu pa sta predstavljena usmerjena grafa in reševanje nekaterih problemov iz linearne algebre s pomočjo teh dveh grafov. Poudarek je na dokazu determinante.

Math.Subj.Class(2010): 05C50, 05C62, 05C76, 05C78, 05C20.

Ključne besede:
Linearna algebra, usmerjeni graf, Königov usmerjeni graf, Coatesov usmerjeni graf, matrika, determinanta.

ABSTRACT:

The work presents the applications of graph theory in linear algebra. Presented here are two digraphs, called the König digraph and the Coates digraph. The work is divided into two bigger parts. The first part contains definitions from the graph theory and the linear algebra, that are needed as a tool for understanding the rest of the work. The second part describes the König digraph and the Coates digraph and solutions to some problems from the linear algebra by the applications of these two digraphs. The stress is on demonstration of determinant of matrix.

Keywords:
Linear algebra, digraph, König digraph, Coates digraph, matrix, determinant.

Literatura

[1] Michael Doob, Applications of Graph Theory in Linear Algebra, *Mathematics Magazine, Vol. 57, no. 2,* (1984), 67-76.

[2] Robin J. Wilson, John J. Watkins, Uvod v teorijo grafov, *DMFA* (1997).

[3] Martin Juvan in Primož Potočnik, Teorija grafov in kombinatorika, *DMFA* (2000) 1.

[4] Bojan Magajna, Linearna algebra, metrični prostor in funkcije več spremenljivk, *DMFA* (2011) 85-92.

[5] http://www.fmf.uni-lj.si/∼kosir/poucevanje/skripta/determinante.pdf.

[6] http://www.fmf.uni-lj.si/∼kosir/poucevanje/skripta/matrike.pdf.

[7] http://www.fmf.uni-lj.si/∼kosir/poucevanje/skripta/permutacije.pdf.

[8] Ivan Vidav, Višja matematika, *DMFA* (1987) 56-72.