Electronic Journal of Linear Algebra ISSN 1081-3810
A publication of the International Linear Algebra Society
Volume 15, pp. 115-133, April 2006

ELA
http://math.technion.ac.il/iic/ela

EIGENVALUES AND EIGENVECTORS OF TRIDIAGONAL MATRICES*

SAID KOUACHI†

Abstract. This paper is continuation of previous work by the present author, where explicit formulas for the eigenvalues associated with several tridiagonal matrices were given. In this paper the associated eigenvectors are calculated explicitly. As a consequence, a result obtained by Wen-Chyuan Yueh and independently by S. Kouachi, concerning the eigenvalues and in particular the corresponding eigenvectors of tridiagonal matrices, is generalized. Expressions for the eigenvectors are obtained that differ completely from those obtained by Yueh. The techniques used herein are based on theory of recurrent sequences. The entries situated on each of the secondary diagonals are not necessary equal as was the case considered by Yueh.

Key words. Eigenvectors, Tridiagonal matrices.

AMS subject classifications. 15A18.

* Received by the editors 9 January 2006. Accepted for publication 21 March 2006. Handling Editor: Ludwig Elsner.

†Laboratoire de mathematiques, Universite de badji, Mokhtar, Annaba, 23200, Algeria (kouachi.said@caramail.com).