Rimas, Jonas
On computing of arbitrary positive integer powers for tridiagonal matrices with elements $-1, 0, 0, \ldots, 0, 1$ in principal and $1, 1, 1, \ldots, 1$ in neighbouring diagonals. II. (English)

Summary: This paper is an extension of [ibid. 188, No. 1, 634–637 (2007; reviewed above)], in which the general expression of the $l$th power $(l \in \mathbb{N})$ for one type of tridiagonal matrices of arbitrary order $n (n \in \mathbb{N}, n \geq 2)$ is given. In this new paper we present the complete derivation of this general expression. Expressions of eigenvectors of the matrix and of the transforming matrix and its inverse are given, too.

MSC:
65F30 Other matrix algorithms (MSC2010)
65F50 Computational methods for sparse matrices
15A21 Canonical forms, reductions, classification

Keywords:
tridiagonal matrices; eigenvalues; eigenvectors; Chebyshev polynomials

Full Text: DOI

References:
[3] Rimas, J., On computing of arbitrary positive integer powers for tridiagonal matrices with elements $-1,0,0,\ldots,0,1$ in principal and $1,1,1,\ldots,1$ in neighbouring diagonals - I, Applied mathematics and computation, (2006)

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