

ZADANIA POWTÓRZENIOWE - SEMESTR II - SERIA 5

ZADANIE 1

OPERATOR $F \in \text{End}(V)$ I FORMA DWULINIOWA $b: V \times V \rightarrow K$ SPEŁNIAJĄ WARUNEK

$$b(Fv, w) = b(v, Fw)$$

PONADTO WIADOMO, ŻE OPERATOR F JEST CYKLICZNY, TZN ISTNIEJE $v \in V$ TAKIE, ŻE $V = \langle v, Fv, F^2v, \dots, F^{n-1}v \rangle$. UDOWODNIĆ, ŻE FORMA TA JEST SYMETRYCZNA

ZADANIE 2

$V = \mathbb{R}^n$ $q(x^1, x^2, \dots, x^n) = \sum_{k=1}^{n-1} x_k x_{k+1}$ ZNALEŹĆ JAKĄŚ BAZĘ DIAGONALIZUJĄCĄ, FORMĘ KWADRATOWĄ q . PODAĆ JEJ RZĄD I SYGNATURĘ.

ZADANIE 3

DLA DANEJ MACIERZY A ZNALEŹĆ MACIERZ S TAKĄ, ŻE SAS^{-1} MA POSTAĆ JORDANA.

$$A = \begin{bmatrix} -1 & -1 & 1 \\ 5 & 0 & 4 \\ 5 & 1 & 3 \end{bmatrix}$$

This article is a biography essay on the life and works of Vidinli Tawfiq Pasha, a 19th-century Ottoman scholar, statesman and general of 19th-century Istanbul, and a noteworthy mathematician who published in 1882 an important book in Linear algebra, a new branch of mathematics at that time. After a short biographical sketch, we present a complete compilation of his writings in Linear Algebra and in other fields.

Salim Aydüz*



Figure 1: Vidinli Tawfiq Pasha. Source:

Vidinli Huseyin Tawfik Pasha (Born in Bulgaria, Vidin 1832- died in Istanbul 16 June 1901) is an Ottoman General, Mathematician and Statesman. At the 19th century, scientific studies during the westernization process in the Ottoman world did not go beyond translation of European scholar's books into Turkish. In this atmosphere, Tawfiq Pasha of Vidin (mostly known as Vidinli Huseyn, Tawfik Pasha in Turkish literature) made research on the very new area in mathematics, the quaternions, and he published a research book on this subject entitled *Linear Algebra* in English. The book was first published in 1882 (169 pages) and a second revised and enlarged edition was published by A. H. Boyajian in 1892 (188 pages) in Istanbul. He was the first mathematician to make innovative research on Linear Algebra. Moreover, his book was one of the first original publications ever published by an Ottoman scientist in modern times after that the originality of the tradition of Islamic science in the Ottoman period knew a lasting decline. In the following article, we introduce Tawfik Pasha's life and works.

1. His Life

Our mathematician was named Tawfik, but to indicate his birthplace and also to distinguish him from his classmate, another Tawfik Pasha, who was a mathematician too, he was known with the nickname Vidinli Tawfik



Linear Algebra (Classic Reprint) Paperback

– June 14, 2012

by Hussein Tevfik (Author)

★★★★★

2 customer reviews

2 Formats: Paperback

Hardcover \$21.95

Paperback \$9.76

See all 8 formats and editions

Other Paperback Sellers on Amazon:

2 Used
from \$8.22

2 New
from \$8.74