

On Circulant matrices with Ducci Sequences and Fibonacci Numbers

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Abstract

A Ducci sequence generated by $A = (a_1, a_2, \dots, a_n) \in R^n$ is the sequence $\{A, DA, D^2A, \dots\}$ where Ducci map $D : R^n \rightarrow R^n$ is defined by

$$DA = D(a_1, a_2, \dots, a_n) = (|a_2 - a_1|, |a_3 - a_2|, \dots, |a_n - a_1|).$$

In this study, we examine some properties of matrices C, DC, D^2C , where $C = (c_0, c_1, \dots, c_{n-1})$ is a circulant matrix, whose entries consist of Fibonacci numbers, and D denotes Ducci map.

Keywords

Circulant Matrix, Ducci Sequence, Fibonacci Numbers

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