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MATRIX SUMMABILITY OF CLASSES OF GEOMETRIC SEQUENCES

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ABSTRACT. Recently Fricke and Fridy [**2**] introduced the set G of complex number sequences that are dominated by a convergent geometric sequence. In this paper we define a set G_t, for any fixed t satisfying $0 < t < 1$, as the set of all the sequences which are dominated by a constant multiple of any sequence $\{s^n\}$ with $s < t$. We study the matrices which map the set G_t into another similar set G_w as well as mapping into the set G. The characterizations of such matrices are established in terms of their rows and columns. Also, several classes of well-known summability methods are investigated as mappings on G_t or into G_t.

1. Introduction. If u is a complex number sequence and $A = [a_{n,k}]$ is an infinite matrix, then Au is the sequence whose n-th term is given by

$$(Au)_n = \sum_{k=0}^{\infty} a_{nk} u_k.$$

The matrix A is called an $X - Y$ matrix if Au is in the set Y whenever u is in X. Also, if

$$\sum_{n=0}^{\infty} (Au)_n = \sum_{k=0}^{\infty} u_k$$

for each u in X, then we say that A is a sum-preserving matrix over X. In [**2**] Fricke and Fridy introduced the set G as the set of complex number sequences that are dominated by a convergent geometric sequence, and they gave characterizations of $G - l$ and $G - G$ matrices. In the present study we consider the set G_t for any fixed t satisfying $0 < t < 1$ as the set of complex number sequences of geometrical domination of order less than t, i.e.,

$$G_t = \{u : u_n = O(r^n) \text{ for some } r \in (0, t)\}.$$

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