THE CONVERGENCE VALUE AND THE SIMPLE CONTINUED FRACTIONS OF SOME SMARANDACHE SEQUENCES

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Abstract . In this paper we consider the convergence value and the simple continued fraction of some Smarandache sequeces.

Key words . Smarandache sequence , convergence value, simple continued fraction.

In [2] . Russo considered the convergence of the Smarandache series , the Smarandache infinite product and the Smarandache simple continued fractions for four Smarandache U-product sequences . Let $A=\{a(n)\}_{n=1}^{\infty}$ be a sequence of nonegative numbers . In this paper we prove two general results as follows.

Theorem 1 . If $a(n)<a(n+1)$ for any n , then

$$\prod_{n=1}^{\infty}\frac{1}{a(n)}=\begin{cases}\infty\ , & \text{if } a(1)=0\ ,\\ 0\ , & \text{if } a(1)\neq 0.\end{cases}$$

Theorem 2 . If $a(n)>0$ for any n with $n>1$, then the simple continued fractions

$$a(1)+\frac{1}{a(2)+}\ \frac{1}{a(3)+}\ \cdots$$

is convergent . Moreover , its value is an irrational number .

Proof of Theorem 1 . Under the assumption , the theorem is clear.

Proof of Theorem 2 . By [1,Theorems 161 and 166] ,

we obtain the theorem immediately.

Refernces

[1] G. H. Hardy and E. M. Wright, An Introduction to the Theory of Numbers, Oxford University Press, Oxford, 1937.

[2] F. Russo, some results about four Smarandache U-product sequences, Smarandache Notions J. 11(2000), 42-49.

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