A SUM CONCERNING SEQUENCES

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Abstract . Let $A=\{a(n)\}^{\infty}_{n=1}$ be a sequence of positive integers. In this paper we prove that if the trailing digit of $a(n)$ is not zero for any n, then sum of $a(n)$/Rev $(a(n))$ is divergent.

Key words. decimal number, reverse, sequence of positive integeers.

Let $a=a_m \ldots a_2 a_1$ be a decimal number . Then the deaimal number $a_1 a_2 \ldots a_m$ is called the reverse of a and denote by Rev(a) . For example , if a=123, then Rev(a)=321 . Let $S=\left\{s(n)\right\}^{\infty} n=1$ be a certain Smarandache sequence such that $s(n)>0$ for any positive integer n . In [1], Russo that proposed to study the limit

$$(1) \qquad L(s)=\lim_{N\to\infty} \sum_{n=1}^{N} \frac{s(n)}{\mathrm{Rev}(s(n))} .$$

In this paper we prove a general result as follows.

Theorem . Let $A=\left\{a(n)\right\}^{\infty}_{n=1}$ be a sequence of positive integers If the trailing digit of $a(n)$ is not zero for any n, then the sum of $a(n)$/Rev $(a(n))$ is divergent.

Proof . Let $a(n)= a_m \cdots a_2 a_1$, where $a_1 \neq 0$. Then we have

$$(2) \qquad \mathrm{Rev}(a(n))=a_1 a_2 \cdots a_m .$$

We see from (2) that

$$(3) \qquad \frac{a(n)}{\mathrm{Rev}(a(n))} > \frac{1}{10} .$$

Thus, by (3), the sum of $a(n)$/Rev($a(n)$) is divergent . The theorem is proved.

References

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

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