ON THE SMARANDACHE PRIME ADDITIVE COMPLEMENT SEQUENCE

Maohua Le

Department of Mathematics, Zhanjiang Normal College Zhanjiang, Guangdong, P.R.China.

Abstract. Let k be an arbitrary large positive integer. In this paper we prove that the Smarandache prime additive complement sequences includes the decreasing sequence k, k-1, ..., 1, 0.

For any positive integer n, let p(n) be the smallest prime which does not excess n. Further let d(n) = p(n) - n. Then

the sequence $D = \{d(n)\}_{n=1}$ is called the Smarandache prime additive complement sequence. Smarandache asked that if it is possible to as large as we want but finite decreasing sequence k, k-1, ..., 1, 0 included in D? Moreover, he conjectured that the answer is negative (see [1, Notion 46]). However, we shall give a positive answer for Smarandache's questions. In this paper we prove the following result:

Theorem. For an arbitrary large positive integer k, D includes the decreasing sequence k, k-1, ..., 1, 0.

Proof. Let n = (k+1)! + 1. Since 2, 3, ..., k+1 are proper divisors of (k+1)!, then all numbers n+1, n+2, ... n+k are composite numbers. It implies that $d(n) \ge k$. Therefore,

D includes the decreasing sequence k, k-1, ..., 1, 0. The theorem is proved.

Reference

1. Dumitrescu and Seleacu, Some Notions and Questions In Number Theory, Erhus Univ. Press, Glendale, 1994