

**Four Smarandache type sequences obtained
concatenating numbers of the form $6k-1$ respectively
 $6k+1$**

Abstract. In this paper I present the following four Smarandache type sequences: (I) The sequence of numbers obtained concatenating the positive integers of the form $6*k - 1$; (II) The sequence of numbers obtained concatenating the primes of the form $6*k - 1$; (III) The sequence of numbers obtained concatenating the positive integers of the form $6*k + 1$; (IV) The sequence of numbers obtained concatenating the primes of the form $6*k + 1$.

Sequence 1 :

Numbers obtained concatenating the positive integers of the form $6*k - 1$.

: 511, 51117, 5111723, 511172329, 51117232935,
5111723293541, 511172329354147, 51117232935414753,
5111723293541475359, 511172329354147535965,
51117232935414753596571, 5111723293541475359657173
(...)

Prime terms in this sequence:

: a(3) = 5111723;
: a(6) = 5111723293541;
(...)

Question: does this sequence contain an infinity of prime terms?

Sequence 2 :

Numbers obtained concatenating the primes of the form $6*k - 1$.

: 511, 51117, 5111723, 511172329, 51117232941,
5111723294147, 511172329414753, 51117232941475359,
5111723294147535971, 511172329414753597183,
51117232941475359718389, 51117232941475359718389101
(...)

Primes in this sequence:

: a(3) = 5111723;
: a(10) = 511172329414753597183;

: a(24) = 51117232941475359718389101107113131137149
 167173179191197227233;
 (...)

Question: does this sequence contain an infinity of prime terms? Is just a coincidence that the first three prime terms of this sequence end in a prime of the form $30*k + 23$ (23, 83, respectively 233)?

Question: note that $a(2) + a(3) + a(4) - 2 = 51117 + 5111723 + 511172329 - 2 = 516335167$, which is a prime number; does exist an infinity of such primes of the form $a(n) + a(n+1) + a(n+2) - 2$?

Sequence 3 :

Numbers obtained concatenating the positive integers of the form $6*k + 1$.

: 1713, 171319, 17131925, 1713192531, 171319253137,
 17131925313743, 1713192531374349,
 171319253137434955, 17131925313743495561,
 1713192531374349556167, 171319253137434955616773,
 17131925313743495561677379
 (...)

Prime terms in this sequence:

: a(10) = 17131925313743495561;
 : a(12) = 171319253137434955616773;
 (...)

Question: does this sequence contain an infinity of prime terms?

Sequence 4 :

Numbers obtained concatenating the primes of the form $6*k + 1$.

: 713, 71319, 7131931, 713193137, 71319313743,
 7131931374361, 713193137436167, 71319313743616773,
 7131931374361677379, 713193137436167737997,
 713193137436167737997103,
 713193137436167737997103109
 (...)

Question: does this sequence contain an infinity of prime terms?

Question: note that $a(1) + a(2) + a(3) - 2 = 713 + 71319 + 7131931 - 2 = 7203961$, which is a prime number; also $a(3) + a(4) + a(5) - 2 = 7131931 + 713193137 + 71319313743 - 2 = 72039638809$, which is a prime number; does exist an infinity of such primes of the form $a(n) + a(n+1) + a(n+2) - 2$?