Primes of the form (6k-1)]c[(6k+1)]c[(6k-1) and (6k+1)]c[(6k-1)]c[(6k+1) where “]c[“ means “concatenated to”

Abstract. In this paper I make the following four conjectures: (I) there exist an infinity of primes p of the form (6*k - 1)]c[(6*k + 1)]c[(6*k - 1), where “]c[“ means “concatenated to" (example: for k = 4, the number p = 232523 is prime); (II) there exist an infinity of primes q of the form (6*k + 1)]c[(6*k - 1)]c[(6*k + 1) (example: for k = 2, the number p = 131113 is prime); (III) there exist an infinity of pairs of primes (p, q) = ((6*k - 1)]c[(6*k + 1)]c[(6*k - 1), ((6*k + 1)]c[(6*k – 1)]c[(6*k + 1)); example: for k = 5, (p, q) = (293129, 32931); note that, for such a pair (p, q), q – p = 19802; 1998002; 199980002 and so on; (IV) there exist, for any h positive integer, an infinity of primes q = p + m, where p is prime and m is the number obtained concatenating 1 with a number of h digits of 9 then with 8 then with the same number of h digits of 0 then with 2.

Conjecture 1:

There exist an infinity of primes p of the form (6*k - 1)]c[(6*k + 1)]c[(6*k - 1), where “]c[“ means “concatenated to" (example: for k = 4, the number p = 232523 is prime).

The sequence of primes p:

: for k = 3, p = 171917 is prime;
: for k = 4, p = 232523 is prime;
: for k = 5, p = 293129 is prime;

[note the chain of three primes p (171917, 232523, 293129) obtained for three consecutive k (3, 4, 5)]

: for k = 10, p = 615961 is prime;
: for k = 13, p = 777977 is prime;
: for k = 14, p = 838583 is prime;
: for k = 15, p = 899189 is prime;

[note the chain of three primes p (777977, 838583, 899189) obtained for three consecutive k (13, 14, 15)]

: for k = 30, p = 179181179 is prime;
: for k = 37, p = 221223221 is prime;
(...)

:   for k = 1000000000000000,
     p = 599999999999999960000000000000015999999999999999
     is prime;
     (...)

Conjecture 2:

exist an infinity of primes q of the form (6*k + 1)]c[(6*k - 1)]c[(6*k + 1) (example: for k = 2, the number p = 131113 is prime).

The sequence of primes p:

:   for k = 1,   p = 757 is prime;
:   for k = 2,   p = 131113 is prime;
:   for k = 5,   p = 312931 is prime;
:   for k = 8,   p = 494749 is prime;
:   for k = 21,   p = 127125127 is prime;
:   for k = 23,   p = 139137139 is prime;
:   for k = 24,   p = 151149151 is prime;
:   for k = 28,   p = 169167169 is prime;
:   for k = 36,   p = 217215217 is prime;
     (...)
:   for k = 1000000000,
     p = 6000000001599999999996000000001 is prime;
     (...)

Conjecture 3:

There exist an infinity of pairs of primes (p, q) = ((6*k - 1)]c[(6*k + 1)]c[(6*k - 1), ((6*k + 1)]c[(6*k - 1)]c[(6*k + 1)); example: for k = 5, (p, q) = (293129, 32931); note that, for such a pair (p, q), q – p = 19802; 1998002; 199980002 and so on.

The sequence of pairs of primes (p, q):

:   (p, q) = (293129, 32931) for k = 5;
     (...)

Conjecture 4:

There exist, for any h positive integer, an infinity of primes q = p + m, where p is prime and m is the number obtained concatenating 1 with a number of h digits of 9 then with 8 then with the same number of h digits of 0 then with 2 (m = 19802, 1998002, 199980002 and so on).

The sequence of pairs of primes (p, p + 19802):
:   (11, 19813), (17, 19819), (41, 19843), (59, 19861), (89, 19891) (...)

The sequence of pairs of primes (p, p + 1998002):
: (17, 1998019), (47, 1998049) (...)

The sequence of pairs of primes (p, p + 199980002):
: (5, 199980007), (11, 199980013), (29, 199980031) (41, 199980043), (47, 199980049) (...)

The sequence of pairs of primes (p, p + 19999800002):
: (41, 19999800043), (47, 19999800049), (59, 19999800061) (...)

The sequence of pairs of primes (p, p + 1999998000002):
: (59, 1999998000061) (...)

The sequence of pairs of primes (p, p + 199999989999992):
: (41, 199999990000033) (...)