

Two conjectures involving the numbers obtained concatenating a prime p with 9 then with p itself

Abstract. In this paper I make the following two conjectures: (I) there exist an infinity of primes q obtained concatenating a prime p with 9 then with p itself (example: $p = 104593$ is prime and $q = 1045939104593$ is also prime); (II) there exist an infinity of primes q obtained concatenating a prime p of the form $6*k - 1$ with 9 then with p itself and subtracting 2 (example: $p = 104471$ is prime and $q = 1044719104471 - 2 = 1044719104469$ is also prime).

Conjecture 1:

There exist an infinity of primes q obtained concatenating a prime p with 9 then with p itself.

Example:

: $p = 104593$ is prime and $q = 1045939104593$ is also prime.

The sequence of primes q :

: 797, 13913, 19919, 47947, 61961, 67967, 71971, 73973, 79979, 1079107, 1379137, 1499149, 1739173, 1799179, 2119211, 2299229, 2699269, 2779277, 2819281, 2839283, 3799379 (...), 1042439104243, 104399, 1043839104383, 1043999104399, 1045939104593, 1045939104593 (...)
obtained for
 $p = 7, 13, 1941, 47, 61, 67, 71, 73, 79, 107, 137, 149, 173, 179, 211, 229, 269, 277, 281, 283, 379$
(...) 104243, 104383, 104399, 104593, 104347 (...)

Conjecture 2:

There exist an infinity of primes q obtained concatenating a prime p of the form $6*k - 1$ with 9 then with p itself and subtracting 2.

Example:

: $p = 104471$ is prime and $q = 1044719104471 - 2 = 1044719104469$ is also prime.

The sequence of primes q :

: 11909, 299027, 53951, 101999, 1799177, 2399237,
2939291, 3119309, 3599357 (...) 1043999104397,
1044719104469, 1046519104649, 1046939104691,
1047119104709 (...)
obtained for
p = 11, 29, 53, 101, 179, 197, 239, 293, 311, 359
(...) 104399, 104471, 104651, 104693, 104711 (...)