Primes obtained concatenating a prime p to the left with 3 and to the right with a square of prime q^2

Abstract. In this paper I make the following conjecture: for any prime p of the form 6*k + 1 there exist an infinity of primes n obtained concatenating p to the left with 3 and to the right with a square of prime q^2 (examples: for p = 13, the numbers n = 313289, 313961, 3131369 – obtained for q = 17, 31, 37 – are primes).

Conjecture:

For any prime p of the form 6*k + 1 there exist an infinity of primes n obtained concatenating p to the left with 3 and to the right with a square of prime q^2 (examples: for p = 13, the numbers n = 313289, 313961, 3131369 – obtained for q = 17, 31, 37 – are primes).

The sequence of squares of primes (A001248 in OEIS):

: 4, 9, 25, 49, 121, 169, 289, 361, 529, 841, 961, 1369, 1681, 1849, 2209, 2809, 3481, 3721, 4489, 5041, 5329, 6241, 6889, 7921, 9409, 10201, 10609, 11449, 11881, 12769, 16129, 17161, 18769, 19321, 22201, 22801, 24649, 26569, 27889, 29929, 32041, 32761, 36481, 37249, 38809, 39601 (...)

The sequence of primes n for p = 7 (up to q = 149):

: n = 37361 for q = 19;
: n = 37529 for q = 23;
: n = 372809 for q = 53;
: n = 373721 for q = 61;
: n = 376241 for q = 79;
: n = 376889 for q = 83;
: n = 3711881 for q = 109;
: n = 3712769 for q = 113;
: n = 3719321 for q = 139.

The sequence of primes n for p = 13 (up to q = 149):

: n = 313289 for q = 17;
: n = 313961 for q = 31;
: n = 3131369 for q = 37;
: n = 3133721 for q = 61;
: n = 3135329 for q = 73;
: n = 31311881 for q = 109;
: n = 31312769 for q = 113;
: n = 31322201 for q = 149.

The sequence of primes n for p = 19 (up to q = 149):

: n = 319169 for q = 13;
: n = 319289 for q = 17;
: n = 3191681 for q = 19;
: n = 3191849 for q = 43;
: n = 3192809 for q = 53;
: n = 31910201 for q = 101;
: n = 31910609 for q = 103;
: n = 31911881 for q = 109;
: n = 31917161 for q = 131;
: n = 31922201 for q = 149.

The sequence of primes n for p = 31 (up to q = 149):

: n = 33149 for q = 7;
: n = 331841 for q = 29;
: n = 3311849 for q = 43;
: n = 3312209 for q = 47;
: n = 3313481 for q = 59;
: n = 3315041 for q = 31;
: n = 33116129 for q = 127.

The sequence of primes n for p = 991 (up to q = 149):

: n = 399149 for q = 7;
: n = 3991289 for q = 17;
: n = 3991961 for q = 31;
: n = 39911681 for q = 41;
: n = 39913721 for q = 61;
: n = 39916241 for q = 79;
: n = 39919409 for q = 97.

The sequence of primes n for p = 997 (up to q = 149):

: n = 3997361 for q = 19;
: n = 39972209 for q = 47;
: n = 39973721 for q = 61;
: n = 39974489 for q = 67;
: n = 399710609 for q = 103;
: n = 399711881 for q = 109;
: n = 399718769 for q = 137.

The sequence of primes n for p = 104701 (up to q = 149):

: n = 3104701361 for q = 19;
: n = 310470111449 for q = 107;
: n = 310470118769 for q = 137;
: n = 310470119321 for q = 139.

The sequence of primes n for p = 104707 (up to q = 149):

: n = 3104707121 for q = 7;
: n = 31047074489 for q = 67;
: n = 31047077921 for q = 89.