Formula based on squares of primes and concatenation which leads to primes and cm-primes

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Abstract. In this paper I present the following observation: concatenating to the right the number p^2 – 1, where p is a prime of the form 6*k – 1, with the digit 1, is often obtained a prime or a c-prime; also, concatenating to the right the number p^2 – 1, where p is a prime of the form 6*k + 1, with the digit 1, is often obtained a prime or a m-prime.

Conjecture 1:

The sequence of the numbers obtained concatenating to the right the numbers p^2 – 1, where p are primes of the form 6*k – 1, with the digit 1, contains an infinity of terms which are primes.

Example: because p^2 = 5^2 = 25 and p^2 – 1 = 24, the term from the sequence defined above corresponding to 5 is 241.

The set of primes:

241, 1201, 5281, 28081, 68881, 79201, 102001, 127681, 278881, 299281, 320401, 364801, 388081 (...), corresponding to the primes 5, 11, 23, 53, 83, 89, 101, 113, 167, 173, 179, 191, 197 (...)

Conjecture 2:

The sequence of the numbers obtained concatenating to the right the numbers p^2 – 1, where p are primes of the form 6*k – 1, with the digit 1, contains an infinity of terms which are c-primes.

The set of c-primes:

: 2881 = 43*67, which is c-prime because 67 – 43 + 1 = 25 = 5^2, a square of prime;
: 8401 = 31*271, which is c-prime because 271 – 31 + 1 = 241, prime;
: 16801 = 53*317, which is c-prime because 317 – 53 + 1 = 265 = 5*53 and 53 – 5 + 1 = 49 = 7^2, which is square of prime;

: 22081 = 71*311, which is c-prime because 311 – 71 + 1 = 241, prime.
: 50401 = 13*3877, which is c-prime because 3877 – 13 + 1 = 3865 = 5*773 and 773 – 5 + 1 = 769, prime;
: 114481 = 239*479, which is c-prime because 479 – 239 + 1 = 241, prime;
: 171601 = 157*1093, which is c-prime because 1093 – 157 + 1 = 937, prime;
: 222001 = 13*17077, which is c-prime because 17077 – 13 + 1 = 17065 = 5*3413 and 3413 – 5 + 1 = 3409 = 4*487 and 487 – 7 + 1 = 481 = 13*37 and 37 – 13 + 1 = 25, a square of prime.

Note that, for the numbers 8401, 22081 and 114481, corresponding to the primes 29, 53 and 107, we have the same c-reached prime, the number 241.

Conjecture 3:

The sequence of the numbers obtained concatenating to the right the numbers p^2 – 1, where p are primes of the form 6*k + 1, with the digit 1, contains an infinity of terms which are primes.

The set of primes:

481, 9601, 13681, 18481, 37201, 53281, 62401, 118801, 161281, 193201, 372481, 396001, 497281 (...), corresponding to the primes 7, 31, 37, 43, 61, 73, 79, 109, 127, 139, 193, 199, 223 (...)

Conjecture 4:

The sequence of the numbers obtained concatenating to the right the numbers p^2 – 1, where p are primes of the form 6*k + 1, with the digit 1, contains an infinity of terms which are m-primes.

The set of m-primes:

: 3601 = 13*277, which is m-prime because 13 + 277 – 1 = 289 = 17^2 and 17 + 17 – 1 = 33 = 3*11 and 3 + 11 – 1 = 13, a prime;
: 44881 = 37*1213, which is m-prime because 1213 + 37 – 1 = 1249, prime;