A recreative method to obtain from a given prime larger primes based on the powers of 3

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Abstract. In this paper I present a method to obtain from a given prime p1 larger primes, namely inserting before of a digit of p1 a power of 3, and, once a prime p2 is obtained, repeating the operation on p2 and so on. By this method I obtained from a prime with 9 digits a prime with 36 digits (the steps are showed in this paper) using just the numbers 3, 9(3^2), 27(3^3) and 243(3^5).

Observation:

A method to obtain from a given prime p1 larger primes seems to be the following one: before of a digit of p1 is inserted a power of 3, and, once a prime p2 is obtained, the operation is repeatead on p2 and so on.

The steps to obtain from a 9-digits prime a 36-digits one:

: p1 = 961748941 is a 9-digits prime randomly chosen;
: inserting 3 before the eight digit of p1 is obtained p2 = 9617489341, prime;
: inserting 27 before the seventh digit of p2 is obtained p3 = 961748279341, prime;
: inserting 3 before the fourth digit of p3 is obtained p3 = 9613748279341, prime;
: inserting 9 before the fourth digit of p4 is obtained p5 = 96193748279341, prime;
: inserting 3 before the fifth digit of p5 is obtained p6 = 961933748279341, prime;
: inserting 27 before the seventh digit of p6 is obtained p7 = 96193327748279341, prime;
: inserting 9 before the tenth digit of p7 is obtained p8 = 961933277948279341, prime;
: inserting 3 before the fourth digit of p8 is obtained p9 = 9613933277948279341, prime;
: inserting 27 before the fifteenth digit of p9 is obtained p10 = 961393327794822779341, prime;
: inserting 9 before the twelfth digit of p10 is obtained p11 = 9613933277994822779341, prime;

: inserting 27 before the second digit of p11 is obtained p12 = 927613933277994822779341, prime;

: inserting 3 before the second digit of p12 is obtained p13 = 9327613933277994822779341, prime;

: inserting 3 before the ninth digit of p13 is obtained p14 = 93276139333277994822779341, prime;

: inserting 3 before the seventeenth digit of p14 is obtained p15 = 932761393332779934822779341, prime;

: inserting 3 before the first digit of p15 is obtained p16 = 3932761393332779934822779341, prime;

: inserting 3 before the seventeenth digit of p16 is obtained p17 = 39327613933327793934822779341, prime;

: inserting 243 before the seventh digit of p17 is obtained p18 = 39327624313933327793934822779341, prime;

: inserting 9 before the tenth digit of p18 is obtained p19 = 393276243913933327793934822779341, prime;

: inserting 3 before the fifth digit of p19 is obtained p20 = 3932376243913933327793934822779341, prime;

: inserting 3 before the sixth digit of p20 is obtained p21 = 39323376243913933327793934822779341, prime;

: inserting 9 before the nineteenth digit of p21 is obtained p22 = 393233762439139339327793934822779341, a 36-digits prime.

Note:

Probably always is obtained a prime p2 by this method for any prime p1 > 5. For 7, for instance, we have the sequence (of course, many such sequences are possible for a given prime, if not infinite) 7, 37, 337, 9337, 93337, 933397, 9333397, 39333397, 393393397, 39339332797, 339339332797, 9339339332797 (...) and for 11 the sequence 11, 311, 9311, 93131, 9312731, 93132731, 2793132731, 27393132731, 237393132731 (...)