Statements on the infinity of few sequences or types of duplets or triplets of primes

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Abstract. In this paper I make few statements on the infinity of few sequences or types of duplets and triplets of primes which, though could appear heterogenous, are all based on the observation of the prime factors of absolute Fermat pseudoprimes, Carmichael numbers, or of relative Fermat pseudoprimes to base two, Poulet numbers.

Note:

See, in my book "Two hundred conjectures and one hundred and fifty open problems on Fermat pseudoprimes", Part Four, "One hundred and fifty open problems regarding Fermat pseudoprimes".

Conjecture 1:

There exist an infinity of positive integers k such that 6*k – 1 and 18*k – 5 are both primes.

Conjecture 2:

There exist an infinity of positive integers k such that 6*k + 1 and 12*k + 1 are both primes.

Conjecture 3:

There exist an infinity of positive integers k such that 6*k + 1 and 18*k + 1 are both primes.

Conjecture 4:

There exist an infinity of positive integers k such that 6*k - 5 and 24*k - 5 are both primes.

Conjecture 5:

There exist an infinity of positive integers k such that 6*k + 1, 12*k + 1 and 18*k + 1 are all three primes.

Conjecture 6:

There exist an infinity of positive integers k such that 6*k + 1, 12*k + 1 and 18*k + 13 are all three primes.

Conjecture 7:

There exist an infinity of positive integers k such that k, 2*k - 1 and 5*k - 4 are all three primes.

Conjecture 8:

There exist an infinity of positive integers k such that k, 2*k - 1 and 3*k - 2 are all three primes.

Conjecture 9:

There exist an infinity of positive integers k such that k, 3*k - 2 and 4*k - 3 are all three primes.

Conjecture 10:

There exist an infinity of positive integers k such that 40*k + 1, 60*k + 1 and 100*k + 1 are all three primes.

Conjecture 11:

There exist an infinity of positive integers k such that k, 2*k – 1, 7*k - 6 and 14*k - 13 are all four primes.

Conjecture 12:

There exist an infinity of positive integers k such that k, 2*k – 1, 6*k - 5 and 12*k - 11 are all four primes.

Conjecture 13:

There exist an infinity of pairs of distinct non-null positive integers m, n such that 60*m*n – 29 and 60*m*n – (60*m + 29) are both primes.

Conjecture 14:

There exist an infinity of pairs of distinct non-null positive integers [m, n] such that 40*m – 10*n - 29 and 40*m – 10*n – 129 are both primes.

Conjecture 15:

For any pair of twin primes [q, r] there exist an infinity of primes p of the form p = 7200*q*r*n + 1, where n is positive integer.

Examples:

: for [q, r] = [5, 7], p is prime for n = 1, 2, 4, 7 (...)

: for [q, r] = [11, 13], p is prime for n = 1, 3, 8 (...)

Conjecture 16:

There exist an infinity of primes p of the form p = n*s(p) – n + 1, where n is positive integer and s(p) is the sum of the digits of p.

Conjecture 17:

There exist an infinity of primes p of the form p = n*s(p) + n - 1, where n is positive integer and s(p) is the sum of the digits of p.

Conjecture 18:

There exist an infinity of primes p of the form p = n*s(p) + n - 1, where n is positive integer and s(p) is the sum of the digits of p.

Conjecture 19:

There exist an infinity of primes p of the form p = m*n + m - n, where m and n are distinct odd primes.

Conjecture 20:

There exist an infinity of primes p of the form p = m^2 – m*n + n, where m and n are distinct odd primes.

Conjecture 21:

There exist an infinity of primes p of the form p = (q + 5^k)/ 10, where q is prime and k positive integer.

Conjecture 22:

There exist an infinity of primes p of the form p = (q + 5^k)/ 30, where q is prime and k positive integer.

Conjecture 23:

There exist an infinity of primes p of the form p = q^3 + 60, where q is prime.

Conjecture 24:

There exist an infinity of primes p, for n positive integer, of the following forms:

: 20*n^2 + 12*n + 1;
: 1800*n^2 + 840*n + 1;
: 3*n^2 + 6*n + 4;
: 4*n^2 + 172*n + 529;
: 20*n^2 + 364*n + 177;
: n^2 + 81*n + 39;
: n^2 + 10*n + 10.