

Conjecture on odd semiprimes which are Harshad numbers that relates them with 2-Poulet numbers

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Abstract. In a previous paper I conjectured that for any largest prime factor of a Poulet number p_1 with two prime factors exists a series with infinite many Poulet numbers p_2 formed this way: $p_2 \bmod (p_1 - d) = d$, where d is the largest prime factor of p_1 (see the sequence A214305 in OEIS). In this paper I conjecture that for any least prime factor of an odd Harshad number h_1 with two prime factors, not divisible by 3, exists a series with infinite many Harshad numbers h_2 formed this way: $h_2 \bmod (h_1 - d) = d$, where d is the least prime factor of p_1 .

Conjecture:

For any least prime factor of an odd Harshad number h_1 with two prime factors, not divisible by 3, exists a series with infinite many Harshad numbers h_2 formed this way: $h_2 \bmod (h_1 - d) = d$, where d is the least prime factor of p_1 .

Note: see the sequence A214305 posted by me in OEIS to see a related conjecture on Poulet numbers with two prime factors.

The sequence of the odd Harshad semiprimes not divisible by 3:

: 209, 247, 407, 481, 511, 629, 803, 1141, 1387, 1417,
1651, 1679, 1853 (...)

Examples:

: for $h_1 = 209 = 11 \cdot 19$ we have the following Harshad numbers h_2 of the form $198 \cdot n + 11$:
: 407, 605, 803 (...);
: for $h_1 = 247 = 13 \cdot 19$ we have the following Harshad numbers h_2 of the form $234 \cdot n + 13$:
: 481, 715, 1183 (...);
: for $h_1 = 481 = 13 \cdot 37$ we have the following Harshad numbers h_2 of the form $468 \cdot n + 13$:
: 1417, 2353, 2821 (...);
: for $h_1 = 511 = 7 \cdot 73$ we have the following Harshad numbers h_2 of the form $504 \cdot n + 7$:
: 1015, 2023, 3031 (...);

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:   for h1 = 629 = 17*37 we have the following Harshad
      numbers h2 of the form 612*n + 17:
          :   1853, 2465, 3077 (...);
:   for h1 = 1387 = 19*73 we have the following Harshad
      numbers h2 of the form 1368*n + 19:
          :   2755, 5491, 8227 (...);
:   for h1 = 1417 = 13*109 we have the following Harshad
      numbers h2 of the form 1404*n + 13:
          :   2821, 4225, 7033 (...);
:   for h1 = 1651 = 13*127 we have the following Harshad
      numbers h2 of the form 1638*n + 13:
          :   8203, 13117, 18031 (...);
:   for h1 = 1679 = 23*73 we have the following Harshad
      numbers h2 of the form 1656*n + 23:
          :   4991, 6647, 14927 (...);
:   for h1 = 1853 = 17*109 we have the following Harshad
      numbers h2 of the form 1836*n + 17:
          :   5525, 7361, 14705 (...).

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