Primes obtained concatenating to the left a prime having an odd prime digit sum s with a divisor of s-1

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Abstract. In a previous paper, "Primes obtained concatenating a Poulet number P with (s - 1)/n where s digits sum of P and n is 2, 3 or 6", I noticed that in almost all the cases that I considered if a prime was obtained through this concatenation than the digits sum of P was a prime. That gave me the ideea for this paper where I observe that for many primes p having an odd prime digit sum s there exist a prime obtained concatenating p to the left with a divisor of s – 1 (including 1 and s – 1).

Observation:

For many primes p having an odd prime digit sum s there exist a prime obtained concatenating p to the left with a divisor d of s – 1 (including 1 and s – 1).

Note: see the sequence A046704 in OEIS for the primes having a prime digit sum.

Verifying the observation:
(true for 15 from the first 16 primes ≠ 5 with an odd prime digit sum)

: 13 is obtained from P = 3 with s = 3 for d = 1, also 23 is obtained from P = 3 for d = 2;

: 17 is obtained from P = 7 with s = 7 for d = 1, also 37 is obtained from P = 7 for d = 3, also 67 is obtained from P = 7 for d = 6;

: 223 is obtained from P = 23 with s = 5 for d = 2;

: 229 is obtained from P = 29 with s = 11 for d = 2;

: 241 is obtained from P = 41 with s = 5 for d = 2;

: 643 is obtained from P = 43 with s = 7 for d = 6;

: 547 is obtained from P = 47 with s = 11 for d = 5;

: 661 is obtained from P = 61 with s = 7 for d = 6;

: 167 is obtained from P = 67 with s = 13 for d = 1, also 367 is obtained from P = 67 for d = 3, also 467 is obtained from P = 67 for d = 12;

: for p = 89 with s = 17 is obtained no prime but a square of prime, 289 for d = 2; indeed the observation could include those as well: from the cases above 529 for p = 29 and d = 5; 361 for p = 61 and d = 3;

: 2113 is obtained from P = 113 with s = 5 for d = 2;

: 2131 is obtained from P = 131 with s = 5 for d = 2;

: 2137 is obtained from P = 137 with s = 11 for d = 2;

: 4139 is obtained from P = 139 with s = 13 for d = 4;

: 1151 is obtained from P = 151 with s = 7 for d = 1, also 6151 is obtained from P = 151 for d = 6;

: 4157 is obtained from P = 157 with s = 13 for d = 4, also 12157 is obtained from P = 157 for d = 12.

Verifying the observation:
(true for 4 from the first 6 primes having 5 digits with an odd prime digit sum)

: 210037 is obtained from P = 10037 with s = 11 for d = 2;

: 110039 is obtained from P = 10039 with s = 13 for d = 1, also 1210039 is obtained for d = 12;

: 810079 is obtained from P = 10079 with s = 17 for d = 8;

: for p = 10091 and p = 10093 is not obtained a prime;

: 910099 is obtained from P = 10099 with s = 19 for d = 9.