Primes obtained concatenating the numbers \( s(p) - d(k) \), where \( s(p) \) is the sum of digits of a prime \( p \) and \( d(1) , ..., d(k) \) the digits of \( p \)

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Abstract. In this paper I make the following conjecture: There exist an infinity of primes \( p \) having the property that concatenating \( s(p) - d(1) \) with \( s(p) - d(2) \) and repeatedly up to \( s(p) - d(k) \), where \( s(p) \) is the sum of digits of \( p \) and \( d(1) , ..., d(k) \) are the digits of \( p \), is obtained a prime \( q \). Example: such prime \( p \) is 127 because concatenating 9 (= 10 - 1) with 8 (= 10 - 2) and with 3 (= 10 - 7) is obtained a prime \( q = 983 \).

Conjecture:

There exist an infinity of primes \( p \) having the property that concatenating \( s(p) - d(1) \) with \( s(p) - d(2) \) and repeatedly up to \( s(p) - d(k) \), where \( s(p) \) is the sum of digits of \( p \) and \( d(1) , ..., d(k) \) are the digits of \( p \), is obtained a prime \( q \).

The sequence of primes \( q \):
(the sign “//” is used with the meaning “concatenated to”)

: \( q = 11 \) for \( p = 11 \) because \( 2 - 1 {//} (2 - 1) = 11; \\
: \( q = 31 \) for \( p = 13 \) because \( 4 - 1 {//} (4 - 3) = 31; \\
: \( q = 71 \) for \( p = 17 \) because \( 8 - 1 {//} (8 - 7) = 71; \\
: \( q = 13 \) for \( p = 31 \) because \( 4 - 3 {//} (4 - 1) = 13; \\
: \( q = 73 \) for \( p = 37 \) because \( 10 - 3 {//} (10 - 7) = 73; \\
: \( q = 17 \) for \( p = 71 \) because \( 8 - 7 {//} (8 - 1) = 17; \\
: \( q = 37 \) for \( p = 73 \) because \( 10 - 7 {//} (10 - 3) = 37; \\
: \( q = 97 \) for \( p = 79 \) because \( 16 - 7 {//} (16 - 9) = 97; \\
: \( q = 79 \) for \( p = 97 \) because \( 16 - 9 {//} (16 - 7) = 79; \\
: \( q = 983 \) for \( p = 127 \) because \( 10 - 1 {//} (10 - 2 {//} (10 - 7) = 983; \\
: \( q = 947 \) for \( p = 163 \) because \( 10 - 1 {//} (10 - 6 {//} (10 - 3) = 947; \\
: \( q = 929 \) for \( p = 181 \) because \( 10 - 1 {//} (10 - 8 {//} (10 - 1) = 929; \\
: \( q = 233 \) for \( p = 211 \) because \( 4 - 2 {//} (4 - 1 {//} (4 - 1) = 233; \\

q = 1297 for p = 257 because (14 - 2)/(14 - 5)/(14 - 7) = 1297;
q = 839 for p = 271 because (10 - 2)/(10 - 7)/(10 - 1) = 839;
q = 1499 for p = 277 because (16 - 2)/(16 - 7)/(16 - 7) = 1499;
q = 12511 for p = 293 because (14 - 2)/(14 - 9)/(14 - 3) = 12511;
q = 7103 for p = 307 because (10 - 3)/(10 - 0)/(10 - 7) = 7103;
q = 13127 for p = 349 because (16 - 3)/(16 - 4)/(16 - 9) = 13127;
q = 13109 for p = 367 because (16 - 3)/(16 - 6)/(16 - 7) = 13109;
q = 457 for p = 431 because (8 - 4)/(8 - 3)/(8 - 1) = 457;
q = 10513 for p = 491 because (14 - 4)/(14 - 9)/(14 - 1) = 10513;
q = 367 for p = 521 because (8 - 5)/(8 - 2)/(8 - 1) = 367;
q = 587 for p = 523 because (10 - 5)/(10 - 2)/(10 - 3) = 587;
q = 569 for p = 541 because (10 - 5)/(10 - 4)/(10 - 1) = 569;
(...)