

Primes obtained concatenating the numbers $30-d(k)$ where $d(1), \dots, d(k)$ are the digits of a square of a prime

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Abstract. In this paper I make the following observation: for many squares of primes (I conjecture that for an infinity of them) the numbers obtained concatenating $30 - d(1), 30 - d(2), \dots, 30 - d(k)$, where $d(1), \dots, d(k)$ are the digits of a square of a prime, are primes. Example: for 1369 (= 37^2) the number obtained concatenating 29 = $30 - 1$ with 27 = $30 - 3$ with 24 = $30 - 6$ with 21 = $30 - 9$, i.e. the number 29272421, is prime. Note that for 35 from the first 200 squares of primes the numbers obtained this way are primes!

Observation:

For many squares of primes (I conjecture that for an infinity of them) the numbers obtained concatenating $30 - d(1), 30 - d(2), \dots, 30 - d(k)$, where $d(1), \dots, d(k)$ are the digits of a square of a prime, are primes.

Example:

For 1369 (= 37^2) the number obtained concatenating 29 = $30 - 1$ with 27 = $30 - 3$ with 24 = $30 - 6$ with 21 = $30 - 9$, i.e. the number 29272421, is prime.

The sequence of primes obtained:

: 2621, from $49 = 7^2$;
: 282221, from $289 = 17^2$;
: 29272421, from $1369 = 37^2$;
: 28223021, from $2809 = 53^2$;
: 26262221, from $4489 = 67^2$;
: 2928232421, from $12769 = 113^2$;
: 2924292821, from $16129 = 127^2$;
: 2721243029, from $39601 = 199^2$;
: 2626252829, from $44521 = 211^2$;
: 2526282221, from $54289 = 233^2$;
: 2421292421, from $69169 = 263^2$;
: 2327262629, from $73441 = 271^2$;

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: 2324232821, from 76729 = 277^2;
: 292721292821, from 139129 = 373^2;
: 292627242629, from 143641 = 379^2;
: 292124282621, from 196249 = 443^2;
: 282629302229, from 241081 = 491^2;
: 282527303021, from 253009 = 503^2;
: 282327252821, from 273529 = 523^2;
: 272824302629, from 326041 = 571^2;
: 272626252421, from 344569 = 587^2;
: 272429283029, from 361201 = 601^2;
: 242526262229, from 654481 = 809^2;
: 233027212829, from 703921 = 839^2;
: 232421292821, from 769129 = 877^2;
: 232324292429, from 776161 = 881^2;
: 232224232421, from 786769 = 887^2;
: 222124223021, from 896809 = 947^2;
: 213022283021, from 908209 = 953^2;
: 29302321252829, from 1079521 = 1039^2;
: 29282429292821, from 1261129 = 1123^2;
: 29272826223029, from 1324801 = 1151^2;
: 29272329282629, from 1371241 = 1171^2;
: 29262827282621, from 1423249 = 1193^2;
(...)

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Note:

For 35 from the first 200 squares of primes the numbers obtained this way are primes!