# Two conjectures on the numbers obtained concatenating the integers of the form 6k+1 with the digits 081

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**Abstract.** In this paper I conjecture that there exist an infinity of positive integers m of the form 6*k + 1 such that the numbers formed by concatenation n = m081 are primes or squares of primes, respectively semiprimes p*q such that q – p + 1 is prime or power of prime.

**Conjecture 1:**

There exist an infinity of positive integers m of the form 6*k + 1 such that the numbers formed by concatenation n = m081 are primes or powers of primes.

**Such pairs [m, n] are:**

: [19, 19081]; [31, 31081]; [97, 97081]; [49, 49081]; [85, 85081]; [91, 91081]; [121, 121081]; [127, 127081]; [157, 157081]; [175, 175081]; [181, 181081]; [187, 187081]; [199, 199081]; [205, 205081]; [217, 217081]; [229, 229081]; [241, 241081 = 491^2]; [253, 253081]; [259, 259081 = 509^2]; [295, 295081]; [313, 313081]; [325, 325081]; [331, 331081]; [337, 337081]; [343, 343081]; [349, 349081]; [379, 379081]; [385, 385081]; [409, 409081]; [421, 421081]; [427, 427081]; [439, 439081]; [475, 475081]; [517, 517081]; [559, 559081]; [577, 577081]; [563, 563081]; [569, 569081]; [595, 595081]; [607, 607081]...

**Conjecture 2:**

There exist an infinity of positive integers m of the form 6*k + 1 such that the numbers formed by concatenation n = m081 are semiprimes p*q such that q – p + 1 is prime or power of prime.

**Such pairs [m, n] are:**

: [1, 1081 = 23*47 and 47 – 23 + 1 = 25 = 5^2];
: [7, 7081 = 73*97 and 97 – 73 + 1 = 25 = 5^2];
: [13, 13081 = 103*127 and 127 – 103 + 1 = 25 = 5^2];
: [37, 37081 = 11*3371 and 3371 – 11 + 1 = 3361];
: [43, 43081 = 67*643 and 643 – 67 + 1 = 577];

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:       [73, 73081 = 107*683 and 683 - 107 + 1 = 577];
:       [79, 79081 = 31*2551 and 2551 - 31 + 1 = 2521];
:       [115, 115081 = 157*733 and 733 - 157 + 1 = 577];
:       [145, 145081 = 59*2459 and 2459 - 59 + 1 = 2401 =
        7^4];
:       [247, 247081 = 211*1171 and 1171 - 211 + 1 = 961 =
        31^2];
:       [271, 271081 = 307*883 and 883 - 307 + 1 = 577];
:       [463, 463081 = 571*811 and 811 - 571 + 1 = 241];
:       [529, 529081 = 7*75583 and 75583 - 7 + 1 = 75577];
:       [535, 535081 = 109*4909 and 4909 - 109 + 1 = 4801];
:       [541, 541081 = 199*2719 and 2719 - 199 + 1 = 2521];
:       [547, 547081 = 229*2389 and 2389 - 229 + 1 = 2161]
[...]
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