Conjecture that any square of a prime can be obtained through an unusual operation on the numbers 360k+72

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Abstract. In this paper I make the following conjecture: The square of any odd prime can be obtained from the numbers of the form 360*k + 72 in the following way: let d1, d2, ..., dn be the (not distinct) prime factors of the number 360*k + 72; than for any square of a prime p^2 there exist k such that (d1 - 1)*(d2 - 1)*...*(dn - 1) + 1 = p^2. Example: for p^2 = 13^2 = 169 there exist k = 17 such that from 360*17 + 72 = 6192 = 2^4*3^2*43 is obtained 1^4*2^2*42 + 1 = 169. I also conjecture that any absolute Fermat pseudoprime (Carmichael number) can be obtained through the presented formula, which attests again the special relation that I have often highlighted between the nature of Carmichael numbers and the nature of squares of primes.

Conjecture:

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The less k for ten squares of odd primes:
(obtained for k up to 100)

: p^2 = 3^2 = 9 is obtained for k = 1 because from 360*1 + 72 = 432 = 2^4*3^3 is obtained 1^4*2^3 + 1 = 9;

: p^2 = 5^2 = 25 is obtained for k = 11 because from 360*11 + 72 = 4032 = 2^6*3^2*7 is obtained 1^6*2^2*6 + 1 = 25;

: p^2 = 7^2 = 49 is obtained for k = 4 because from 360*4 + 72 = 1512 = 2^3*3^3*7 is obtained 1^3*2^3*6 + 1 = 49;

: p^2 = 11^2 = 121 is obtained for k = 6 because from 360*6 + 72 = 2232 = 2^3*3^2*31 is obtained 1^3*2^2*30 + 1 = 121;

: p^2 = 13^2 = 169 is obtained for k = 17 because from 360*17 + 72 = 6192 = 2^4*3^2*43 is obtained 1^4*2^2*42 + 1 = 169;

: p^2 = 17^2 = 289 is obtained for k = 18 because from 360*18 + 72 = 6552 = 2^3*3^2*7*13 is obtained 1^3*2^2*6*12 + 1 = 289;

: p^2 = 23^2 = 529 is obtained for k = 40 because from 360*40 + 72 = 14472 = 2^3*3^3*67 is obtained 1^3*2^3*66 + 1 = 529;

: p^2 = 29^2 = 841 is obtained for k = 42 because from 360*42 + 72 = 15192 = 2^3*3^2*211 is obtained 1^3*2^2*210 + 1 = 841;

: p^2 = 31^2 = 961 is obtained for k = 48 because from 360*48 + 72 = 17352 = 2^3*3^2*241 is obtained 1^3*2^2*240 + 1 = 961;

: p^2 = 41^2 = 1681 is obtained for k = 84 because from 360*84 + 72 = 30312 = 2^3*3^2*421 is obtained 1^3*2^2*420 + 1 = 1681.

Conjecture:

Any Carmichael number can be obtained from the numbers of the form 360*k + 72 in the following way: let d1, d2, ..., dn be the (not distinct) prime factors of the number 360*k + 72; than for any Carmichael number C there exist k such that (d1 - 1)*(d2 - 1)*...*(dn - 1) + 1 = C.

The less k for two Carmichael numbers:
(obtained for k up to 100)

: C = 561 is obtained for k = 85 because from 360*85 + 72 = 30672 = 2^4*3^3*71 is obtained 1^4*2^3*70 + 1 = 561;

: C = 1729 is obtained for k = 96 because from 360*96 + 72 = 34632 = 2^3*3^2*13*37 is obtained 1^3*2^2*12*36 + 1 = 1729.