Conjecture on the numbers (p^2-n)÷(n-1) where p prime

Abstract. In this paper I state the following conjecture: for any p prime there exist at least a value of n, different from p, for which the number (p^2 – n)/(n – 1) is prime.

Conjecture:

For any p prime there exist at least a value of n, different from p, for which the number q = (p^2 – n)/(n – 1) is prime.

Verifying the conjecture:
(for the first 7 primes p)

: for p = 5, q = 23, prime, for n = 2; also q = 11, prime for n = 3; also q = 7, prime, for n = 4;
: for p = 7, q = 47, prime, for n = 2; also q = 23, prime, for n = 3; also q = 11, prime, for n = 5;
: for p = 11, q = 29, prime, for n = 5; also q = 23, prime for n = 6; also q = 19, prime, for n = 7;
: for p = 13, q = 167, prime, for n = 2; also q = 83, prime, for n = 3; also q = 4, prime, for n = 5; also q = 23, prime, for n = 8;
: for p = 17, q = 71, prime, for n = 5; also q = 47, prime, for n = 7; also q = 31, prime, for n = 10; also q = 23, prime, for n = 13;
: for p = 19, q = 359, prime, for n = 1; also q = 179, prime, for n = 3; also q = 89, prime, for n = 5; also q = 71, prime, for n = 6; also q = 59, prime, for n = 7; also q = 29, prime, for n = 13; also q = 23, prime, for n = 16;
: for p = 23, q = 263, prime, for n = 3; also q = 131, prime, for n = 5; also q = 47, prime, for n = 12; also q = 43, prime, for n = 13.

Note that many primes (I conjecture that an infinity of primes) can be written as sqr(24*m – 23):

: 7 = sqr(24*3 – 23);
: 11 = sqr(24*6 – 23);
: 13 = sqr(24*8 – 23);
: 17 = sqr(24*13 – 23);
: 19 = sqr(24*16 – 23).

I also conjecture that there exist an infinity of primes that can be written as sqr(48*m – 47); examples: 7, 17, 23 for n = 2, 7, 12.