A very simple but possible important conjecture about primes

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Abstract. In this paper I present a conjecture about primes with an extremely simple enunciation, but very interesting despite (or on the contrary, because of) its simplicity.

Conjecture:

Any prime number q, $q \geq 11$, can be written as $q = 3*(p_1 - 1) + p_2$, where p_1 and p_2 are odd primes.

The sequence of the lowest p_1 for which the primes that can be written as $q = 3*(p_1 - 1) + p_2$, where p_1 and p_2 are odd primes (the conjecture above states that all the primes greater than or equal to 11 can be written this way), can be written this way:

: 3, 3, 3, 3, 3, 3, 5, 3, 5, 3, 3, 3, 3, 7, 3, 3, 3, 5, 3, 7, 5, 3, 3, 3, 3, 7, 7, 3, 5, 5, 5, 3, 3, 7, 3, 3, 7, 5, 5, 3, 3, 5, 5, 11, 3, 3, 3, 5, 5, 3, 3, 3, 11, 3, 5, 3, 5, 11, 7, 3, 3, 7, 3, 11, 5, 3, 3, 7, 3, 3, 11, 3, 7, 5, 5, 7, 5, 5, 5, 3, 5, 3, 7, 5, 3, 3, 5, 11, 5 (...)

The corresponding p_2 and q in the sequence above:

: (5,11), (7,13), (11,17), (13,19), (17,23), (23,29), (19,31), (31,37), (29,41), (37,43), (41,47), (47,53), (53,59), (43,61), (61,67), (67,73), (73,79), (71,83), (83,89), (79,97), (89,101), (97,103), (101,107), (103,109), (107,113), (109,127), (113,131), (131,137), (127,139), (137,149), (139,151), (151,157), (157,163), (149,167), (167,173), (173,179), (163,181), (179,191), (181,193), (191,197), (193,199), (199,211), (211,223), (197,227), (223,229), (227,233), (233,239), (229,241), (239,251), (251,257), (257,263), (263,269), (241,271), (271,277), (269,281), (277,283), (281,293), (277,307), (293,311), (307,313), (311,317), (313,331), (331,337), (317,347), (337,349), (347,353), (353,359), (349,367), (367,373), (373,379), (353,383), (383,389), (379,397), (389,401), (397,409), (401,419), (409,421), (419,431), (421,433), (433,439), (431,443), (443,449), (439,457), (449,461), (457,463), (461,467), (467,479), (457, 487), (479, 491), (487, 499).

Note:

Another way to enunciate the conjecture: for any prime p greater than or equal to 11 there exist at least a smaller prime q such that q = p – 3*n, where n can be 2, 4, 6, 10, 12, 16, 18, 22, 28 and so on (n + 1 is odd prime).