

Primes obtained concatenating p prime with $p+2$ and $p+6$ respectively with $p+4$ and $p+6$

Abstract. The triplets of primes $[p, p + 2, p + 6]$ and $[p, p + 4, p + 6]$ have already been studied: Hardy and Wright conjectured that there exist an infinity of such triplets. In this paper I make the following two conjectures on the triplets $[p, p + 2, p + 6]$ and $[p, p + 4, p + 6]$, but only p is required to be prime: (I) there exist an infinity of primes q obtained concatenating a prime p with $p + 2$ then with $p + 6$; example: for $p = 11$, the number $q = 111317$ is prime; (II) there exist an infinity of primes q obtained concatenating a prime p with $p + 4$ then with $p + 6$; example: for $p = 241$, the number $q = 241245247$ is prime.

Conjecture I:

There exist an infinity of primes q obtained concatenating a prime p with $p + 2$ then with $p + 6$; example: for $p = 11$, the number $q = 111317$ is prime.

The sequence of primes q :

: 5711, 111317, 131519, 171923, 373943, 414347,
616367, 838589, 9799103, 103105109, 151153157,
167169173, 173175179, 223225229, 331333337,
593595599, 631633637, 653655659, 673675679,
701703707, 727729733, 751753757, 761763767,
797799803, 877879883, 9979991003 (...),
obtained for $p = 5, 11, 13, 17, 37, 41, 83, 167,$
 $173, 223, 331, 593, 631, 653, 673, 701, 727, 751,$
 $761, 797, 877, 997 (...)$

Conjecture II:

There exist an infinity of primes q obtained concatenating a prime p with $p + 4$ then with $p + 6$; example: for $p = 241$, the number $q = 241245247$ is prime.

The sequence of primes q :

: 137141143, 241245247, 283287289, 293297299,
307311313, 311315317, 431435437, 461465467,
503507509, 521525527, 547551553, 577581583,
587591593, 617621623, 673677679, 701705707,
787791793, 821825827, 857861863, 881885887,
937941943, 983987989, 101310171019 (...)
obtained for $p = 137, 241, 283, 293, 307, 311, 431,$
 $461, 521, 547, 577, 587, 617, 673, 701, 787, 821,$
 $857, 881, 937, 983, 1013 (...)$