

## Four conjectures on the triplets $[p, p+2, p+8]$ and $[p, p+6, p+8]$ where $p$ prime

**Abstract.** In this paper I make the following four conjectures on the triplets  $[p, p + 2, p + 8]$  and  $[p, p + 6, p + 8]$ : (I) there exist an infinity of triplets of primes of the form  $[p, p + 2, p + 8]$ ; (II) there exist an infinity of triplets of primes of the form  $[p, p + 6, p + 8]$ ; (III) there exist an infinity of primes  $q$  obtained concatenating a prime  $p$  with  $p + 2$  then with  $p + 8$  (only  $p$  is necessary prime); (IV) there exist an infinity of primes  $q$  obtained concatenating a prime  $p$  with  $p + 6$  then with  $p + 8$  (only  $p$  is necessary prime).

### Conjecture I:

There exist an infinity of triplets of primes of the form  $[p, p + 2, p + 8]$ . Obviously  $p$  has the form  $6*k - 1$ .

**Such triplets of primes are:**

:  $[5, 7, 13], [11, 13, 19], [29, 31, 37], [59, 61, 67], [71, 73, 79], [101, 103, 109], [149, 151, 157], [191, 193, 199], [269, 271, 277]...$   
(see A046134 in OEIS)

### Conjecture II:

There exist an infinity of triplets of primes of the form  $[p, p + 6, p + 8]$ . Obviously  $p$  has the form  $6*k - 1$ .

**Such triplets of primes are:**

:  $[5, 11, 13], [11, 17, 19], [23, 29, 31], [53, 59, 61], [101, 107, 109], [131, 137, 139], [173, 179, 181], [191, 197, 199], [233, 239, 241], [263, 269, 271]...$   
(see A046138 in OEIS)

### Conjecture III:

There exist an infinity of primes  $q$  obtained concatenating a prime  $p$  with  $p + 2$  then with  $p + 8$  (only  $p$  is necessary prime).

**The sequence of primes  $q$ :**

: 101103109, 103105111, 179181187, 199201207,  
263265271, 283285291, 311313319, 349351357,  
353355361 (...)

**Conjecture IV:**

There exist an infinity of primes  $q$  obtained concatenating a prime  $p$  with  $p + 6$  then with  $p + 8$  (only  $p$  is necessary prime).

**The sequence of primes  $q$ :**

: 313739, 616769, 737981, 838991, 109115117,  
239245247, 263269271, 223229231, 281287289,  
389395397 (...)