Prime Quadruplet Conjecture

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Abstract

Prime Quadruplet and Twin Primes have exactly the same dynamics.

All Prime Quadruplet are executed in hexagonal circulation. It does not change in a huge number (forever huge number).
In the hexagon, Prime Quadruplet are generated only at (6n -1)(6n+5). [n is a positive integer]

When the number grows to the limit, the denominator of the expression becomes very large, and primes occur very rarely, but since Prime Quadruplet are 16/3 of the fourth power distribution of primes, the frequency of occurrence of Prime Quadruplet is very equal to 0.

However, it is not 0. Therefore, Cousin Primes continue to be generated.

If Prime Quadruplet is finite, the Primes is finite.
The probability of Prime Quadruplet 16/3 of the fourth power probability of appearance of the Prime. This is contradictory. Because there are an infinite of Primes.

That is, Prime Quadruplet exist forever.

key words
Hexagonal circulation, Prime Quadruplet,
16/3 of the fourth power probability of the Primes

Introduction

The Prime Quadruplet is represented as (6n -1) or (6n+1). And, n is positive integer.

All Prime Quadruplet are combination of (6n -1) and (6n+1).
That is, all Prime Quadruplet are a combination of 5th-angle and 1th-angle.

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5th-angle is (6n -1).
1th-angle is (6n+1).

(6n -2), (6n), (6n+2) are even numbers.

(6n -1), (6n+1), (6n+3) are odd numbers.

The Prime Quadruplet are (6n -1) and (6n+1).
There are no prime numbers that are not (6n -1) or (6n+1).
The following is a Prime Quadruplet.
5 ——— 6n -1
7 ——— 6n+1
11 ——— 6n -1
13 ——— 6n+1
....
....

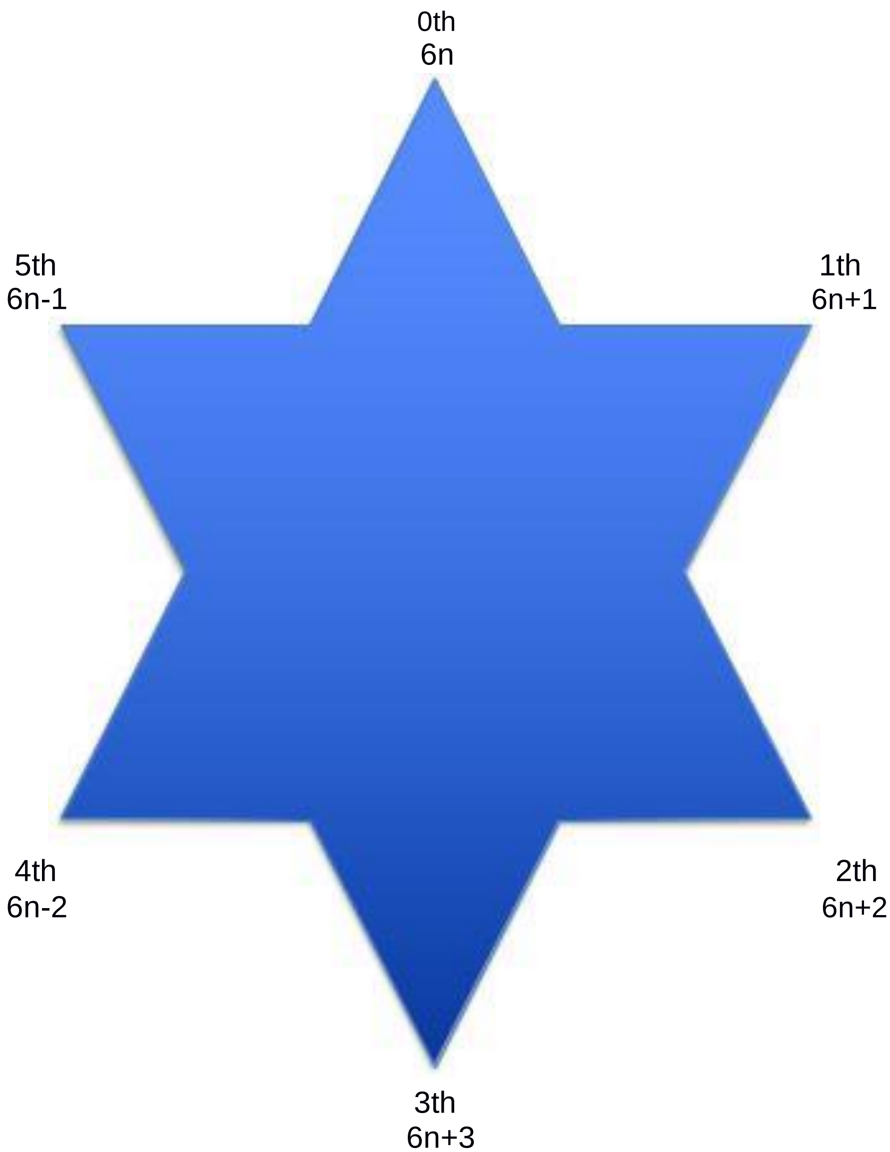
The Prime Quadruplet are bellow.

(5, 7, 11, 13), (11, 13, 17, 19), (101, 103, 107, 109),
(191, 193, 197, 199), (821, 823, 827, 829), (1481, 1483, 1487, 1489),
(1871, 1873, 1877, 1879), (2081, 2083, 2087, 2089), (3251, 3253, 3257, 3259),
(3461, 3463, 3467, 3469), (5651, 5653, 5657, 5659), (9431, 9433, 9437, 9439),
(13001, 13003, 13007, 13009), (15641, 15643, 15647, 15649), (15731, 15733, 15737, 15739),
(16061, 16063, 16067, 16069), (18041, 18043, 18047, 18049), (18911, 18913, 18917, 18919),
(19421, 19423, 19427, 19429), (21011, 21013, 21017, 21019), (22271, 22273, 22277, 22279),
(25301, 25303, 25307, 25309), (31721, 31723, 31727, 31729), (34841, 34843, 34847, 34849),
(43781, 43783, 43787, 43789), (51341, 51343, 51347, 51349), (55331, 55333, 55337, 55339),
(62981, 62983, 62987, 62989), (67211, 67213, 67217, 67219), (69491, 69493, 69497, 69499),
(72221, 72223, 72227, 72229), (77261, 77263, 77267, 77269), (79691, 79693, 79697, 79699),
(81041, 81043, 81047, 81049), (82721, 82723, 82727, 82729), (88811, 88813, 88817, 88819),
(97841, 97843, 97847, 97849), (99131, 99133, 99137, 99139) ......etc.......

There are 1225 Primes frpm 1 to 1×10^4=10000.
Probability is $\frac{1225}{10000}$.
In this, there are 12 Prime Quadruplet. Probability is $\frac{12}{10000}$=0.0012
and $[\frac{1225}{10000}]^4 \times \frac{16}{3}$=0.001201000208333...

There are 9592-1225=8367 Primes from 1×10^4 to 1×10^5=100000.
Probability is $\frac{8357}{100000}$.
In this, there are 26 Prime Quadruplet. Probability is $\frac{26}{100000}$=0.00026
and $[\frac{8367}{100000}]^4 \times \frac{16}{3}$=0.00026138328025294512

16/3 of the fourth power is in Prime Quadruplet.


0th
6n
5th
6n-1
1th
6n+1
4th
6n-2
2th
6n+2
3th
6n+3

Discussion

Although not found in the literature, Prime Quadruplet and twin primes have exactly the same dynamics.
This means that if twin primes are infinite, Prime Quadruplet are infinite.

The probability that Prime Quadruplet will occur 16/3 of the fourth power of the probability that a Prime will occur in a huge number, where the probability that a prime will occur is low from the equation (1).
While a Primes is generated, Prime Quadruplet be generated.

And, as can be seen from the equation below, even if the number becomes large, the degree of occurrence of Primes only decreases little by little.

$$\pi(x) \sim \frac{x}{\log x} \quad (x \to \infty) \tag{1}$$

$\log(10^{20}) = 20\log(10) \approx 46.0517018$
$\log(10^{200}) = 200\log(10) \approx 460.517018$
$\log(10^{2000}) = 2000\log(10) \approx 4605.17018$
$\log(10^{20000}) = 20000\ \log(10) \approx 46051.7018$
$\log(10^{200000}) = 200000\ \log(10) \approx 460517.018$
$\log(10^{2000000}) = 2000000\ \log(10) \approx 4605170.18$
$\log(10^{20000000}) = 20000000\ \log(10) \approx 46051701.8$
$\log(10^{200000000}) = 200000000\ \log(10) \approx 460517018$

(Expected to be larger than $\log(10^{200000})$)

As x in $\log(x)$ grows to the limit, the denominator of the equation also grows extremely large. Even if primes are generated, the frequency of occurrence is extremely low. The generation of Prime Quadruplet is 16/3 of the fourth power of the generation frequency of primes, and the generation frequency is extremely low.

However, as long as Primes are generated, Prime Quadruplet are generated with a very low frequency.

When the number grows to the limit, the denominator of the expression becomes very large, and primes occur very rarely, but since Prime Quadruplet are 16/3 of the fourth power of the distribution of Primes, the frequency of occurrence of Prime Quadruplet is very equal to 0.

However, it is not 0. Therefore, Prime Quadruplet continue to be generated.

However, when the number grows to the limit, the probability of the Prime Quadruplet appearing is almost 0 because it is 16/3 of the fourth power of probability of the appearance of the Prime.
It is a subtle place to say that almost 0 appears.

Use a contradiction method.
If Prime Quadruplet is finite, the Primes is finite.
The probability of Prime Quadruplet 16/3 of the fourth power of the probability of the appearance of the Prime.
This is contradictory. Because there are an infinite of Primes.

That is, Prime Quadruplet exist forever.

Proof end.

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