Prime Triplet Conjecture

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Abstract

Prime Triplet and Twin Primes have exactly the same dynamics.

All Prime Triplet are executed in hexagonal circulation. It does not change in a huge number (forever huge number).
In the hexagon, Prime Triplet are generated only at (6n -1)(6n+1). [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 Triplet are 35/12 times of the 3th power distribution of primes, the frequency of occurrence of Prime Triplet is very equal to 0.

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

If Prime Triplet is finite, the Primes is finite.
The probability of Prime Triplet 35/12 times of the 3th power probability of appearance of the Prime. This is contradictory. Because there are an infinite of Primes.

That is, Prime Triplet exist forever.

key words
Hexagonal circulation, Prime Triplet,
35/12 times of the 3th power probability of the Primes

Introduction

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

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

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3th-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 Triplet are \((6n -1)\) and \((6n+1)\).
There are no prime numbers that are not \((6n -1)\) or \((6n+1)\).
The following is a Prime Triplet.
\[
5 \quad 6n -1 \\
7 \quad 6n+1 \\
11 \quad 6n -1 \\
\ldots \ldots
\]
\[
(5, 7, 11), (11, 13, 17), (13, 17, 19), (17, 19, 23), (37, 41, 43), (41, 43, 47), (67, 71, 73), (97, 101, 103)....
\]

and
\((p, p+2, p+6)\) type
\[
\]

sum is 43.

and
\((p, p+4, p+6)\) type
\[
7, 13, 37, 67, 97, 103, 193, 223, 277, 307, 457, 613, 823, 853, 877, 1087, 1297, 1423, 1447, 1483, 1663, 1693, 1783, 1867, 1873, 1993, 2083, 2137, 2377, 2683, 2707, 2797, 3163, 3253, 3457, 3463, 3847, 4153, 4513, 4783, 5227, 5413, 5437....
\]

sum is 43.

In \((p, p+2, p+6)\) type
There are 783 Primes from 1 to \(6 \times 10^3=6000\).
Probability is \(\frac{783}{1000}\).
In this, there are 43 Prime Triplet. Probability is \(\frac{43}{6000}=0.0071666...\)
and \(\left[\frac{783}{6000}\right]^3 \times \frac{35}{12}=0.00648213890625\)
In (p, p+4, p+6) type
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If the number of triplets less than 10^8 is 55,600 and 55,556 respectively[6].

In (p, p+2, p+6) type
There are 5761455 Primes from 1 to 1 \times 10^8.
Probability is $\frac{5761455}{100000000}$.
In this, there are 55600 Prime Triplet. Probability is $\frac{55600}{100000000}=0.000556$
and $\left[\frac{5761455}{100000000}\right]^3 \times \frac{35}{12}=0.00055780617902704412484375$

In (p, p+4, p+6) type
There are 5761455 Primes from 1 to 1 \times 10^8.
Probability is $\frac{5761455}{100000000}$.
In this, there are 55556 Prime Triplet. Probability is $\frac{55556}{100000000}=0.0005556$
and $\left[\frac{5761455}{100000000}\right]^3 \times \frac{35}{12}=0.00055780617902704412484375$

The meaning of the constant 35/12 is currently under consideration.
The diagram represents a geometric figure with vertices labeled as follows:

- 0th: 6n
- 1st: 6n+1
- 2nd: 6n+2
- 3rd: 6n+3
- 4th: 6n-2
- 5th: 6n-1

The vertices are connected to form a star-like shape.
Discussion

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

The probability that Prime Triplet will occur $\frac{35}{12}$ times of the 3th 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 Triplet 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.

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

(1)

\[
\begin{align*}
\log(10^{20}) &= 20 \log(10) \approx 46.0517018 \\
\log(10^{200}) &= 200 \log(10) \approx 460.517018 \\
\log(10^{2000}) &= 2000 \log(10) \approx 4605.17018 \\
\log(10^{20000}) &= 20000 \log(10) \approx 46051.7018 \\
\log(10^{200000}) &= 200000 \log(10) \approx 460517.018 \\
\log(10^{2000000}) &= 2000000 \log(10) \approx 4605170.18
\end{align*}
\]

(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 Triplet is $\frac{35}{12}$ times of the 3th power of the generation frequency of primes, and the
generation frequency is extremely low.

However, as long as Primes are generated, Prime Triplet 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 Triplet are $\frac{35}{12}$ times of the 3th power of the
distribution of Primes, the frequency of occurrence of Prime Triplet is very equal to 0.

However, it is not 0. Therefore, Prime Sextuplet continue to be generated.
However, when the number grows to the limit, the probability of the Prime Triplet appearing is almost 0 because it is 35/12 times of the 3th 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 Triplet is finite, the Primes is finite.
The probability of Prime Triplet 35/12 times of the 3th power of the probability of the appearance of the Prime.
This is contradictory. Because there are an infinite of Primes.

That is, Prime Triplet exist forever.

Proof end.

References


