Prime Quintuplet Conjecture

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Abstract

Prime Quintuplet and Twin Primes have exactly the same dynamics.

Prime Quintuplet is represented as (p, p+2, p+6, p+8, p+12) and all prime numbers.

In the hexagon, Prime Quintuplet 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 Quadruplet are 8/3 of the fifth power distribution of primes, the frequency of occurrence of Prime Quintuplet is very equal to 0.

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

If Prime Quintuplet is finite, the Primes is finite.
The probability of Prime Quintuplet 8/3 of the fifth power probability of appearance of the Prime. This is contradictory. Because there are an infinite of Primes.

and
(probability of the occurrence of the Primes)=
(probability of the occurrence of the Primes Quintuplet)$^{1/5}$ $\times$ (3/8)

That is, Prime Quintuplet exist forever.

key words
Hexagonal circulation, Prime Quintuplet,
8/3 of the fifth power probability of the Primes

Introduction

Prime Quintuplet is represented as (p, p+2, p+6, p+8, p+12) and all prime numbers.

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

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

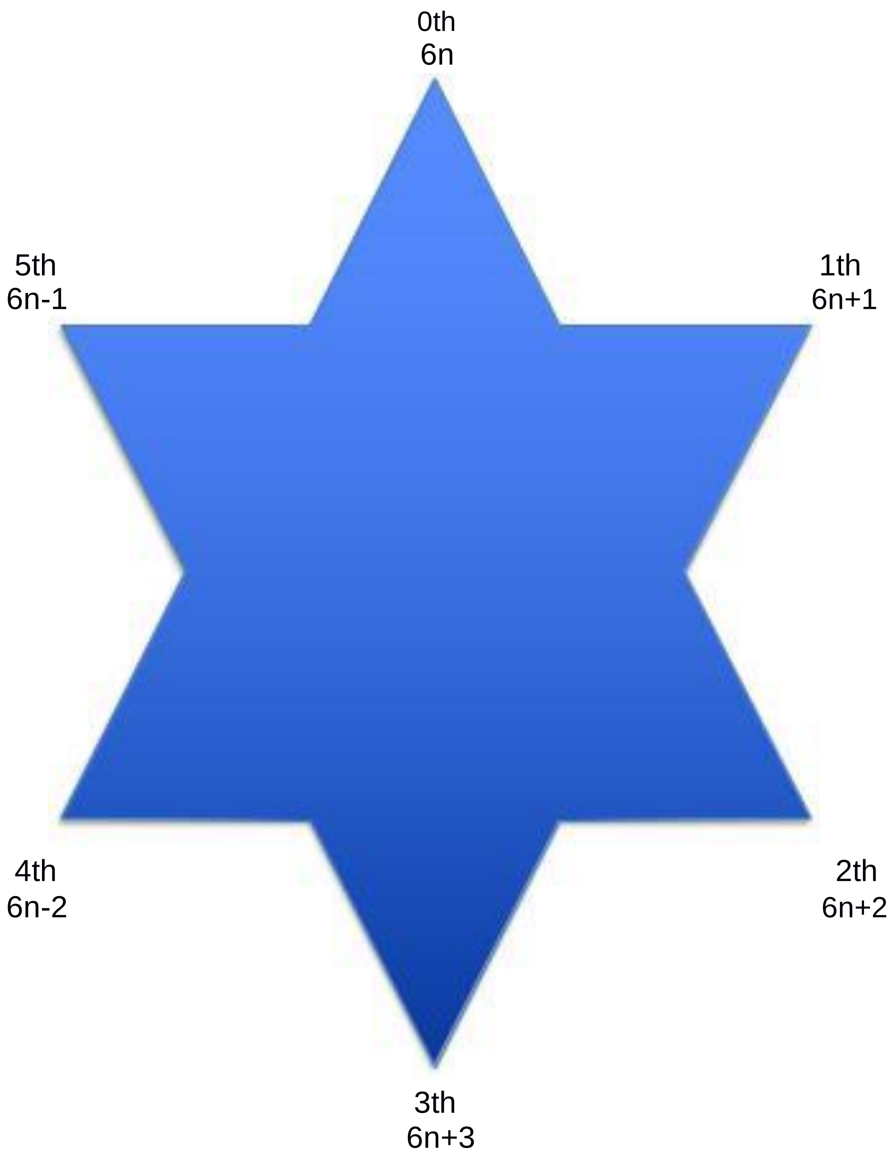
The following is a Prime Quintuplet.
5 ——— 6n -1
7 ——— 6n+1
11 ——— 6n -1
13 ——— 6n+1
17 ——— 6n -1
....
....

The Prime Quintuplet are bellow[3].

(5, 7, 11, 13, 17), (11, 13, 17, 19, 23), (101, 103, 107, 109, 113), (1481, 1483, 1487, 1489, 1493), (16061, 16063, 16067, 16069, 16073), (19421, 19423, 19427, 19429, 19433), (21011, 21013, 21017, 21019, 21023), (22271, 22273, 22277, 22279, 22283), (43781, 43783, 43787, 43789, 43793), (55331, 55333, 55337, 55339, 55343), (144161, 144163, 144167, 144169, 144173), (165701, 165703, 165707, 165709, 165713), (166841, 166843, 166847, 166849, 166853), (195731, 195733, 195737, 195739, 195743), (201821, 201823, 201827, 201829, 201833), (225341, 225343, 225347, 225349, 225353), (247601, 247603, 247607, 247609, 247613), (268811, 268813, 268817, 268819, 268823), (326141, 326143, 326147, 326149, 326153), (347981, 347983, 347987, 347989, 347993), (361211, 361213, 361217, 361219, 361223), (397751, 397753, 397757, 397759, 397763), (465161, 465163, 465167, 465169, 465173), (518801, 518803, 518807, 518809, 518813), (536441, 536443, 536447, 536449, 536453), (633461, 633463, 633467, 633469, 633473), (633791, 633793, 633797, 633799, 633803), (661091, 661093, 661097, 661099, 661103), (768191, 768193, 768197, 768199, 768203), (795791, 795793, 795797, 795799, 795803), (829721, 829723, 829727, 829729, 829733), (857951, 857953, 857957, 857959, 857963), (876011, 876013, 876017, 876019, 876023), (958541, 958543, 958547, 958549, 958553), (1008851, 1008853, 1008857, 1008859, 1008863), (1022501, 1022503, 1022507, 1022509, 1022513)...........
......etc.......

There are 726517 Primes from 1 to 1.1×10^7=11000000.
Probability is $\frac{726517}{11000000}$.
In this, there are 36 Prime Quintuplet. Probability is $\frac{36}{11000000}$=3.272727...$\times 10^{-6}$
and $[\frac{726517}{11000000}]^5 \times \frac{8}{3}$=3.3514613180554...$\times 10^{-6}$

The meaning of constant $8/3$ is under consideration.


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 Quintuplet and twin primes have exactly the same dynamics.
This means that if twin primes are infinite, Prime Quintuplet are infinite.

The probability that Prime Quintuplet will occur 8/3 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 Quintuplet 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 Quintuplet is 8/3 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 Quintuplet 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 Quintuplet are 8/3 of the fourth power of the distribution of Primes, the frequency of occurrence of Prime Quintuplet is very equal to 0.

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

However, when the number grows to the limit, the probability of the Prime Quintuplet appearing is almost 0 because it is 8/3 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 Quintuplet is finite, the Primes is finite.
The probability of Prime Quintuplet 8/3 of the fourth power of the probability of the appearance of the Prime.
This is contradictory. Because there are an infinite of Primes.

and
(probability of the occurrence of the Primes)=
(probability of the occurrence of the Primes Quintuplet)$^{1/5}$ $\times$ (3/8)

That is, Prime Quintuplet exist forever.

Proof end.

References

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