A proof of Twin Prime Conjecture

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Abstract

I proved the Twin Prime Conjecture.

The probability twin prime approximately is slightly lower than 4/3 times the square of the probability that a prime will appear in.

I investigated up to 5×10^{12}.

When the number grows to the limit, the primes to be produced rarely, but since Twin Primes are slightly lower than 4/3 times the square of the distribution of primes, the frequency of production of Twin Primes is very equal to 0.

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

However, it is not 0. Because, primes continue to be produced. Therefore, Twin Primes continue to be produced.

Use a contradiction method.
If the Twin Primes is finite, the primes is finite.
This is because slightly lower than 4/3 times the square of the probability of primes is the probability of Twin Primes.
This is contradiction. Because there are an infinite of primes.

$[Probability\ of\ the\ Existence\ of\ Primes]^2 \times 4/3=$
(Probability of the Existence of Twin Primes)

That is, Twin Primes exist forever.

key words

Hexagonal circulation, Twin Primes, slightly lower than 4/3 times the square of the probability of primes

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Introduction

In this paper, it is written in advance that 2 and 3 are omitted from primes.

The prime number is represented as (p) or (p+2). (p)=6n-1 or (p+2)=6n+1. And, n is positive integer.

All Twin Primes are combination of (p) and (p+2).
That is, all Twin Primes are a combination of 5th-angle and 1th-angle.

5th-angle is (p)=6n -1.
1th-angle is (p+2)=6n+1.

(6n -2=p -1), (6n=p+1), (6n+2=p+3) in are even numbers.
(p), (p+2), (p+4) are odd numbers.

Primes are (p) or (p+2).
The following is a prime number.
There are no primes that are not (p) or (p+2).
5 ——— p (Twin prime)
7 ——— p+2
11 ——— p (Twin prime)
13 ——— p+2
17 ——— p (Twin prime)
19 ——— p+2
23 ——— p
29 ——— p (Twin prime)
31 ——— p+2
....
....

Part 1

There are 37607912014 primes from 5 to
1×10^{12}.
Probability is $\frac{37607912014}{99999999996}$.
In this, there are 1870585218 Twin Primes. Probability is $\frac{1870585218}{99999999996} = 0.001870585218007...$
and $[\frac{37607912014}{99999999996}]^2 \times \frac{4}{3} = 0.00188580672808544...$

There are 177291661645 primes from 5 to
$5000000000000 = 5 \times 10^{12}$.
Probability is $\frac{177291661645}{4999999999996}$.
In this, there are 8312493001 Twin Primes. Probability is
$\frac{8312493001}{4999999999996} = 0.00166249860020133....$

and
$[\frac{177291661645}{4999999999996}]^2 \times \frac{4}{3} = 0.00167639110874109...$

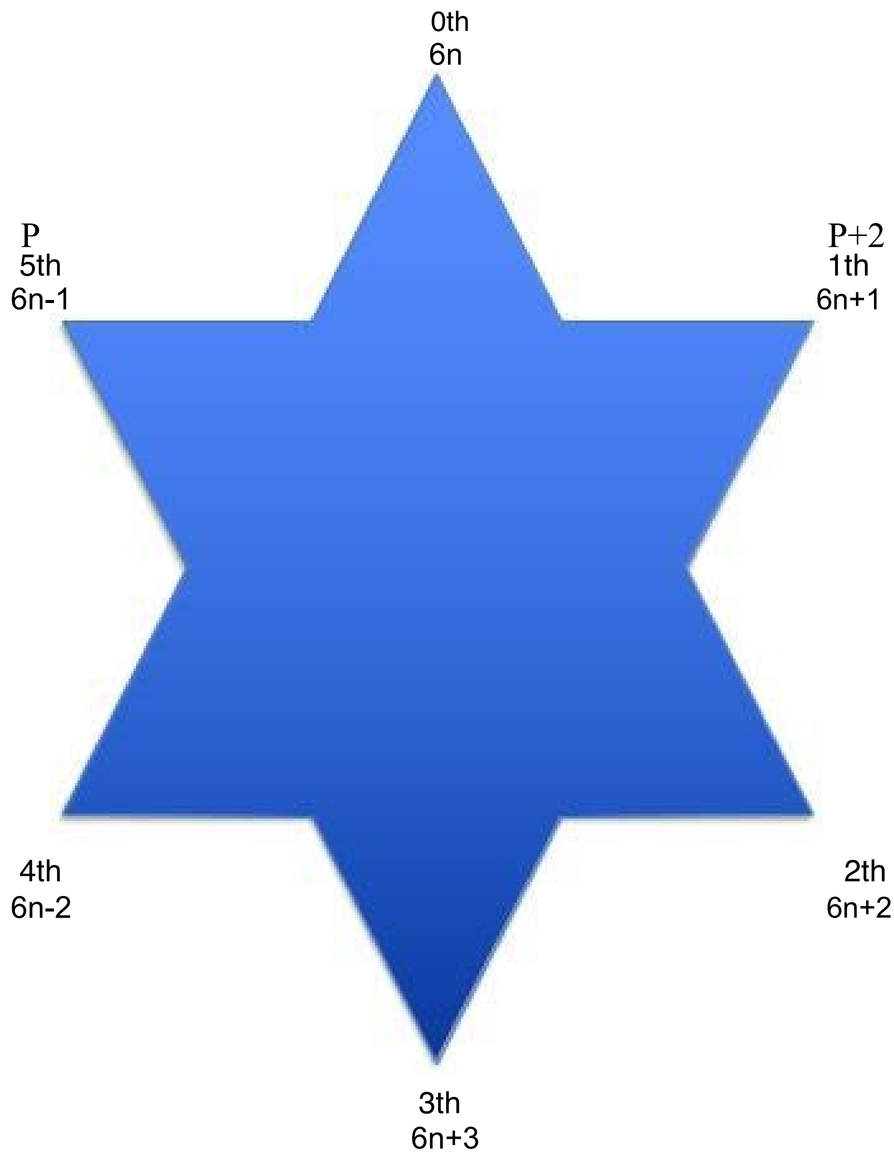
Part 2

There are 37607912016-4118054809=33489857207 primes from 1×10^{11} to 1×10^{12}=9×10^{11}.
Probability is $\frac{33489857207}{900000000000}$=0.0372109524522...
In this, there are 1870585219-224376047=1646209172 Twin Primes. Probability is $\frac{1646209172}{900000000000}$=0.00182912130222...
and
$[\frac{33489857207}{900000000000}]^2 \times \frac{4}{3}$=0.0018462066432020...

There are 17729166164-3760791201=13968374963 primes from 1×10^{12} to 5×10^{12}=4×10^{12}.
Probability is $\frac{13968374963}{400000000000}$=0.0349209374075
In this, there are 8312493001-1870585219=6441907782 Twin Primes. Probability is $\frac{6441907782}{400000000000}$=0.0016104769455
and
$[\frac{13968374963}{400000000000}]^2 \times \frac{4}{3}$=0.001625962492558...

It shows a slightly lower value than 4/3.

Calculation depends on Wolfram Alpha and Wolfram Cloud.


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

Discussion

The need for a constant suggest that the prime numbers (p) and (p+2) do not occur independently.

First, say p = 6n+5=6n -1

$(p) \times 5$ =(6n-1)$\times(6n-1) = 36n^2 - 12n + 1$= 1th-angle.
$(p+2) \times 5$ =(6n+1)$\times(6n-1) = 36n^2 - 1$= 5th-angle.
and
$(p) \times 7$ =(6n-1)$\times(6n+1) = 36n^2 - 1$= 5th-angle.
$(6n+1) \times 7$ =(6n+1)$\times(6n+1) = 36n^2 + 12n + 1$= 1th-angle.
and
$(p) \times 11$ =(6n-1)$\times(6n-1) = 36n^2 - 12n + 1$= 1th-angle.
$(6n+1) \times 11$ =(6n+1)$\times(6n-1) = 36n^2 - 1$= 5th-angle.
and
$(p) \times 13$ =(6n-1)$\times(6n+1) = 36n^2 - 1$= 5th-angle.
$(p+2) \times 13$ =(6n+1)$\times(6n+1) = 36n^2 + 12n + 1$= 1th-angle.
and
$(p) \times 17$ =(6n -1)$\times(6n-1) = 36n^2 - 12n + 1$= 1th-angle.
$(p+2) \times 17$ =(6n+1)$\times(6n-1) = 36n^2 - 1$= 5th-angle.
and
$(p) \times 19$ =(6n-1)$\times(6n+1) = 36n^2 - 1$= 5th-angle.
$(p+2) \times 19$ =(6n+1)$\times(6n+1) = 36n^2 + 12n + 1$=1th-angle.
and
$(p) \times (p)$=(6n-1)$\times(6n-1) = 36n^2 - 12n + 1$= 1th-angle.
(p)$\times(p+2) = (6n-1) \times (6n+1)$=36n$^2 - 1$= 5th-angle.
and
$(p+2) \times (p)$=(6n-1)$\times(6n+1) = 36n^2 - 1$=5th-angle.
$(p+2) \times (p+2)$=(6n+1)$\times(6n+1) = 36n^2 + 12n + 1$= 1th-angle.

In this way, prime multiples of (p) or (p+2) of primes fill 5th-angle, 1th-angle, and the location of primes becomes little by little narrower.

However, every time the hexagon is rotated once, the number of locations where the primes exists increases by two.

The probability that a Twin Prime will be produced slightly lower than 4/3 times the square of the probability that a prime will be produced in a huge number, where the probability that a prime production is low from the equation (1).

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

$$\pi(x) \sim \frac{x}{\log x} \quad (x \to \infty) \tag{2}$$

$\log(10^{20}) = 20 \log(10) \approx 46.0517018$
$\log(10^{200}) = 200 \log(10) \approx 460.517018$
$\log(10^{2000}) = 2000 \log(10) \approx 4605.17018$
$\log(10^{20000}) = 20000 \log(10) \approx 46051.7018$
$\log(10^{200000}) = 200000 \log(10) \approx 460517.018$

As x in $\log(x)$ grows to the limit, the denominator of the equation also grows extremely large. Even if primes are produced, the frequency of production is extremely low.
The production of Twin Primes is slightly lower than 4/3 times the square of the production frequency of primes, and the production frequency is extremely low.

The production of Twin Primes equal the existence of Twin Primes. And, the production of Primes equal the existence of Primes.

Use a contradiction method.
If the Twin Primes is finite, the primes is finite.
This is because slightly lower than 4/3 times the square of the probability of primes is the probability of Twin Primes.
This is contradiction. Because there are an infinite of primes.

$[Probability\ of\ the\ Existence\ of\ primes]^2 \times 4/3=$
(Probability of the Existence of Twin Primes)

I am at a loss as to whether it can be said that extremely low is produced infinitely close to 0. However, it can be said that it is produced because it is greater than zero.
The contradiction method is decisive.

That is, Twin Primes exist forever.

Proof end.

References

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Postscript

I thank Prof. S. Saitoh for his many advices.
And fried-turnip's Yahoo Answers, for a Wolfram Cloud program that you have me tell you, the last of the stuffing was able at once.
Thanks to fried-turnip, it was decided whether 4/3 would be a constant.

In the early days of manual calculations, the constant was 6/5.

There was a mistake in the hand calculation, and at the beginning it became such a stance.

After 200,000 by hand calculation, the constant changed to 4/3, and I was thinking what value this would change in the future. However, Wolfram Cloud can easily calculate the number of twin primes. Knew. This was taught by fried-turnip in Yahoo!