Sexy Primes Conjecture

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Abstract

Sexy Primes Conjecture were prooved.
Sexy Primes and Twin Primes and Cousin Primes have exactly the same dynamics.

All Primes are executed in hexagonal circulation. It does not change in a huge number (forever huge number).

In the hexagon, Sexy Primes 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 Sexy Primes are 8/3 times the square of the distribution of primes, the frequency of occurrence of Sexy Primes is very equal to 0.

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

If Sexy Primes is finite, the Primes is finite.
Because, Sexy Primes are 8/3 times the square of the distribution of primes.
This is contradictory. Since there are an infinite of Primes.

That is, Sexy Primes exist forever.

key words
Hexagonal circulation, Sexy primes, 8/3 times the square of the probability of the Primes

Introduction

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

Also, as I say first, Sexy Primes and Twin primes appear almost twice as often as twice.

The Sexy Primes is represented as (6n -1)(6n -1) or (6n+1)(6n+1).

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The following is a Sexy Primes.
There are no prime numbers that are not (6n -1) or (6n+1).
5————6n -1 (Sexy Primes)
11————-6n -1

7 ——— 6n+1 (Sexy Primes
13 ——— 6n+1

11 ——— 6n -1 (Sexy Primes)
17 ——— 6n -1

13 ——— 6n+1 (Sexy Primes)
19 ——— 6n+1
....
(5,11), (7,13), (11,17), (13,19), (17,23), (23,29), (31,37), (37,43), (41,47), (47,53), (53,59), (61,67), (67,73), (73,79), (83,89), (97,103), (101,107), (103,109), (107,113), (131,137), (151,157), (157,163), (167,173), (173,179), (191,197), (193,199), (223,229), (227,233), (233,239), (251,257), (257,263), (263,269), (271,277), (277,283), (307,313), (311,317), (331,337), (347,353), (353,359), (367,373), (373,379), (383,389), (433,439), (443,449), (457,463), (461,467)
....
From the above, the appearance frequency of Sexy Primes is almost twice than Twin Primes and Cousin Primes.

I wrote below the distribution of Sexy Primes.

(number)	(Sexy prime)	(Twin Prime)	(Cousin Primes)
100000	2447	1224	1216
200000	4295	2160	2136
300000	6003	2994	3975
400000	7650	3804	3817
500000	9184	4565	4559
600000	10688	5331	5334
700000	12138	6061	6085
800000	13587	6766	6798
900000	15000	7472	7471
1000000	16386	8169	8144
2000000	29419	14871	14742
3000000	41559	20932	20826
4000000	53224	26860	26629
5000000	64481	32463	32308
6000000	75417	37915	37787
7000000	86165	43258	43125
8000000	96705	48617	48288
9000000	107042	53866	53468
10000000	117207	58980	58622

90000000............................801602.........................401089..............................401025
100000000=1×10^8............879908.........................430311..............................440258

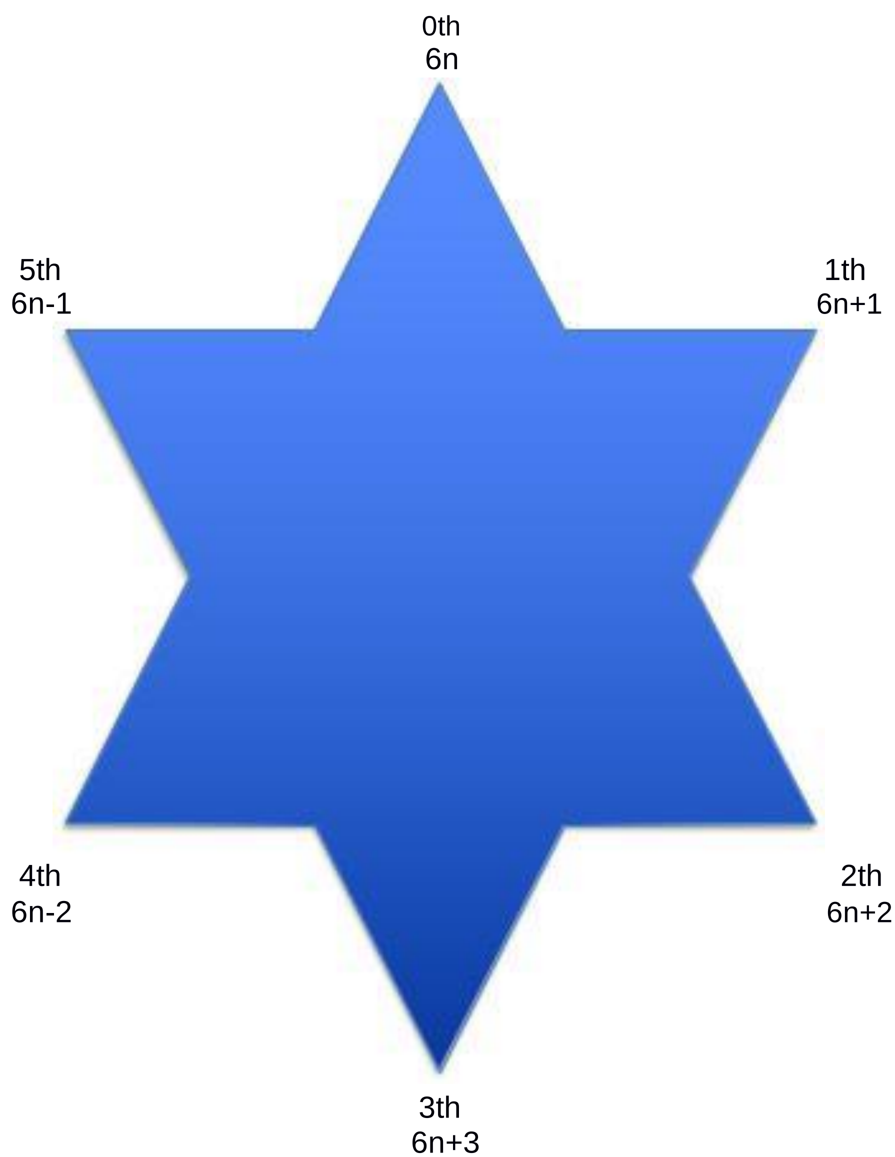
There are 9592 Primes to 1×10^5=100000.
Probability is $\frac{9592}{100000}$.
In this, there are 2447 Sexy Primes. Probability is $\frac{2447}{100000}$=0.02447
and $[\frac{9592}{100000}]^2 \times \frac{8}{3}$=0.0245350570666....

and
There are 78498 Primes to 1×10^6=1000000.
Probability is $\frac{78498}{1000000}$.
In this, there are 16386 Cousin Primes. Probability is $\frac{16386}{1000000}$=0.016386
and $[\frac{78498}{1000000}]^2 \times \frac{8}{3}$=0.016431829344

and
There are 664579 Primes to 1×10^7=10000000.
Probability is $\frac{664579}{10000000}$.
In this, there are 117207 Cousin Primes. Probability is $\frac{117207}{10000000}$=0.0117207
and
$[\frac{664579}{10000000}]^2 \times \frac{8}{3}$=0.01177773992642666...

There are 5761455 Primes to $1 \times 10^8 = 100000000$.
Probability is $\frac{5761455}{10000000}$.
In this, there are 879908 Cousin Primes. Probability is $\frac{879908}{10000000}$=0.0879908
and $[\frac{5761455}{10000000}]^2 \times \frac{8}{3}$=0.0088518303...

As in the case of Twin Primes, constant = 8/3 even in Sexy Primes.
From now on, the appearance frequency of Sexy Primes is almost double, and it can be said that it is double.


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

Discussion

Although Sexy Primes and Twin Primes are twice as likely to appear, it can be said that the appearance mechanism is the same, and that there are infinitely Sexy Primes.

The probability that Sexy Primes will occur 8/3 times the square 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, Cousin Primes 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.

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

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

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 Sexy Primes is approximately the square of the generation frequency of primes, and the generation frequency is extremely low.

However, as long as Primes are generated, Sexy Primes 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 Sexy Primes are 8/3 times the square of the distribution of Primes, the frequency of occurrence of Sexy Primes is very equal to 0.

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

Use a contradiction method.
If Sexy Primes is finite, the Primes is finite.
This is contradictory. Because there are an infinite of Primes.

That is, Sexy Primes exist forever.

Proof end.

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