The New Prime theorems（741）-（790）

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Abstract: Using Jiang function we are able to prove almost all prime problems in prime distribution. This is the Book proof. No great mathematicians study prime problems and prove Riemann hypothesis in AIM, CLAYMI, IAS, THES, MPIM, MSRI. In this paper using Jiang function $J_2(\omega)$ we prove that the new prime theorems (741)-（790) contain infinitely many prime solutions and no prime solutions. From (6) we are able to find the smallest solution $\pi_k(N_0,2)\ge 1$. This is the Book theorem.

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Keywords: new; prime theorem; Jiang Chunxuan

It will be another million years, at least, before we understand the primes.
Paul Erdos (1913-1996)
TATEMENT OF INTENT
If elected. I am willing to serve the IMU and the international mathematical community as president of the IMU. I am willing to take on the duties and responsibilities of this function.
These include (but are not restricted to) working with the IMU's Executive Committee on policy matters and its tasks related to organizing the 2014 ICM，fostering the development of mathematics, in particular in developing countries and among young people worldwide, representing the interests of our community in contacts with other international scientific bodies, and helping the IMU committees in their function.
--IMU president, Ingrid Daubechies—
Satellite conference to ICM 2010

Analytic and combinatorial number theory (August 29-September 3, ICM2010) is a conjecture. The sieve methods and circle method are outdated methods which cannot prove twin prime conjecture and Goldbach's conjecture. The papers of Goldston-Pintz-Yildirim and Green-Tao are based on the Hardy-Littlewood prime k-tuple conjecture (1923). But the Hardy-Littlewood prime k-tuple conjecture is false:
(http://www.wbabin.net/math/xuan77.pdf)
(http://vixra.org/pdf/1003.0234v1.pdf).

The world mathematicians read Jiang's book and papers. In 1998 Jiang disproved Riemann hypothesis. In 1996 Jiang proved Goldbach conjecture and twin prime conjecture. Using a new analytical tool Jiang invented: the Jiang function, Jiang prove almost all prime problems in prime distribution. Jiang established the foundations of Santilli's isonumber theory. China rejected to speak the Jiang epoch-making works in ICM2002 which was a failure congress. China considers Jiang epoch-making works to be pseudoscience. Jiang negated ICM2006 Fields medal (Green and Tao theorem is false) to see.
(http://www.wbabin.net/math/xuan39e.pdf)
(http://www.vixra.org/pdf/0904.0001v1.pdf).

There are no Jiang's epoch-making works in ICM2010. It cannot represent the modern mathematical level. Therefore ICM2010 is failure congress. China rejects to review Jiang's epoch-making works. For fostering the development of Jiang prime theory IMU is willing to take on the duty and responsibility of this function to see[new prime k-tuple theorems (1)-(20)] and the [new prime theorems (1)-(690)]: (http://www.wbabin.net/xuan.htm#chun-xuan) (http://vixra.org/numth/)

The New Prime theorem（741）

$$P, jP^{1402}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1402}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1402}+k-j(j=1,\cdots,k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1402}+k-j\right]\equiv 0 \pmod P), q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\le P-2$ then from (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1402}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\ne 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\le N: jP^{1402}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1402)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\ge 1$.

Example 1. Let $k=3$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\ne 3$.

From (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (8)$$

We prove that for $k\ne 3$,

(1) contain infinitely many prime solutions

The New Prime theorem（742）

$$P, jP^{1404}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1404}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1404}+k-j(j=1,\cdots,k-1) \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1404}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\le P-2$ then from (2) and (3) we have

$$J_2(\omega)\neq 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1404}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\neq 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\le N: jP^{1404}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1404)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\ge 1$.

Example 1. Let $k=3,5,7,13,19,37,53,79,109,157$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3,5,7,13,19,37,53,79,109,157$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\neq 3,5,7,13,19,37,53,79,109,157$.

From (2) and (3) we have

$$J_2(\omega)\neq 0 \quad (8)$$

We prove that for $k\neq 3,5,7,13,19,37,53,79,109,157$,

(1) contain infinitely many prime solutions

The New Prime theorem（743）

$$P, jP^{1406}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1406}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1406}+k-j(j=1,\cdots,k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1406}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\le P-2$ then from (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1406}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\ne 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\le N: jP^{1406}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1406)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\ge 1$.

Example 1. Let $k=3$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\ne 3$.

From (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (8)$$

We prove that for $k\ne 3$,

(1) contain infinitely many prime solutions

The New Prime theorem（744）

$$P, jP^{1408}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1408}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1408}+k-j(j=1,\cdots,k-1) \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1408}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\le P-2$ then from (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1408}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\ne 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\le N: jP^{1408}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1408)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\ge 1$.

Example 1. Let $k=3,5,17,23,89,353,1409$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3,5,17,23,89,353,1409$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\ne 3,5,17,23,89,353,1409$.

From (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (8)$$

We prove that for $k\ne 3,5,17,23,89,353,1409$,

(1) contain infinitely many prime solutions

The New Prime theorem（745）

$$P, jP^{1410}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1410}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1410}+k-j(j=1,\cdots,k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1410}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\le P-2$ then from (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1410}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\ne 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\le N: jP^{1410}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1410)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\ge 1$.

Example 1. Let $k=3,7,11,31,283$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3,7,11,31,283$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\ne 3,7,11,31,283$.

From (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (8)$$

We prove that for $k \neq 3,7,11,31,283$,
(1) contain infinitely many prime solutions

The New Prime theorem（746）

$$P, jP^{1412}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1412}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1412}+k-j(j=1,\cdots,k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.
Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1412}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\le P-2$ then from (2) and (3) we have

$$J_2(\omega)\neq 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1412}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\neq 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\le N: jP^{1412}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1412)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\ge 1$.

Example 1. Let $k=3,5$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3,5$,
(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\neq 3,5$.
From (2) and (3) we have

$$J_2(\omega) \neq 0 \tag{8}$$

We prove that for $k \neq 3,5$,

(1) contain infinitely many prime solutions

The New Prime theorem（747）

$$P, jP^{1414}+k-j (j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1414}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1414}+k-j (j=1,\cdots,k-1). \tag{1}$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega) = \prod_{P>2}[P-1-\chi(P)] \tag{2}$$

where $\omega = \prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1414}+k-j\right] \equiv 0 \pmod P, q=1,\cdots,P-1 \tag{3}$$

If $\chi(P) \leq P-2$ then from (2) and (3) we have

$$J_2(\omega) \neq 0 \tag{4}$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1414}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega) = 0 \tag{5}$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega) \neq 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2) = \left|\left\{P \leq N : jP^{1414}+k-j = prime\right\}\right| \sim \frac{J_2(\omega)\omega^{k-1}}{(1414)^{k-1}\phi^k(\omega)} \frac{N}{\log^k N} \tag{6}$$

where $\phi(\omega) = \prod_P (P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2) \geq 1$.

Example 1. Let $k=3$. From (2) and(3) we have

$$J_2(\omega) = 0 \tag{7}$$

we prove that for $k=3$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k \neq 3$.

From (2) and (3) we have

$$J_2(\omega) \neq 0 \quad (8)$$

We prove that for $k \neq 3$,
(1) contain infinitely many prime solutions

The New Prime theorem（748）

$$P, jP^{1416}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1416}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1416}+k-j(j=1,\cdots,k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.
Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1416}+k-j\right]\equiv 0 \pmod{P}, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\leq P-2$ then from (2) and (3) we have

$$J_2(\omega)\neq 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1416}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\neq 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\leq N: jP^{1416}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1416)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\geq 1$.

Example 1. Let $k=3,5,7,13,709$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3,5,7,13,709$,
(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k \neq 3,5,7,13,709$.

From (2) and (3) we have

$$J_2(\omega) \neq 0 \quad (8)$$

We prove that for $k \neq 3,5,7,13,709$,

(1) contain infinitely many prime solutions

The New Prime theorem（749）

$$P, jP^{1418} + k - j (j = 1, \cdots, k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1418} + k - j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1418} + k - j (j = 1, \cdots, k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega) = \prod_{P>2} [P - 1 - \chi(P)] \quad (2)$$

where $\omega = \prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1} \left[jq^{1418} + k - j \right] \equiv 0 \pmod{P}, q = 1, \cdots, P-1 \quad (3)$$

If $\chi(P) \leq P-2$ then from (2) and (3) we have

$$J_2(\omega) \neq 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1418} + k - j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P) = P-1$. Substituting it into (2) we have

$$J_2(\omega) = 0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega) \neq 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2) = \left| \left\{ P \leq N : jP^{1418} + k - j = prime \right\} \right| \sim \frac{J_2(\omega)\omega^{k-1}}{(1418)^{k-1}\phi^k(\omega)} \frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega) = \prod_P (P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0, 2) \geq 1$.

Example 1. Let $k = 3$. From (2) and(3) we have

$$J_2(\omega) = 0 \quad (7)$$

we prove that for $k=3$,
(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k \neq 3$.
From (2) and (3) we have

$$J_2(\omega) \neq 0 \quad (8)$$

We prove that for $k \neq 3$,
(1) contain infinitely many prime solutions

The New Prime theorem（750）

$$P, jP^{1420}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1420}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1420}+k-j(j=1,\cdots,k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.
Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1420}+k-j\right]\equiv 0 \pmod{P}, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\leq P-2$ then from (2) and (3) we have

$$J_2(\omega)\neq 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1420}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]
If $J_2(\omega)\neq 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\leq N: jP^{1420}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1420)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\geq 1$.

Example 1. Let $k=3,5,11$
. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3,5,11$,
(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k \neq 3,5,11$.
From (2) and (3) we have

$$J_2(\omega)\neq 0 \quad (8)$$

We prove that for $k \neq 3,5,11$,
(1) contain infinitely many prime solutions

The New Prime theorem（751）

$$P, jP^{1422}+k-j(j=1,\cdots,k-1)$$

Chun-Xuan Jiang
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Abstract

Using Jiang function we prove that $jP^{1422}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1422}+k-j(j=1,\cdots,k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.
Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1422}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\leq P-2$ then from (2) and (3) we have

$$J_2(\omega)\neq 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1422}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\neq 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\{P\leq N: jP^{1422}+k-j=prime\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1422)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\geq 1$.

Example 1. Let $k = 3, 7, 19, 1423$. From (2) and(3) we have

$$J_2(\omega) = 0 \quad (7)$$

we prove that for $k = 3, 7, 19, 1423$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k \neq 3, 7, 19, 1423$.

From (2) and (3) we have

$$J_2(\omega) \neq 0 \quad (8)$$

We prove that for $k \neq 3, 7, 19, 1423$,

(1) contain infinitely many prime solutions

The New Prime theorem（752）

$$P, jP^{1424} + k - j (j = 1, \cdots, k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1424} + k - j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1424} + k - j (j = 1, \cdots, k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega) = \prod_{P>2} [P - 1 - \chi(P)] \quad (2)$$

where $\omega = \prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1} \left[jq^{1424} + k - j \right] \equiv 0 \pmod P, q = 1, \cdots, P-1 \quad (3)$$

If $\chi(P) \leq P - 2$ then from (2) and (3) we have

$$J_2(\omega) \neq 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1424} + k - j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P) = P - 1$. Substituting it into (2) we have

$$J_2(\omega) = 0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega) \neq 0$ then we have asymptotic formula [1,2]

$$\pi_k(N, 2) = \left| \{ P \leq N : jP^{1424} + k - j = prime \} \right| \sim \frac{J_2(\omega)\omega^{k-1}}{(1424)^{k-1}\phi^k(\omega)} \frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega) = \prod_P (P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\ge 1$.

Example 1. Let $k=3,5,17,179$. From (2) and(3) we have

$$J_2(\omega)=0 \tag{7}$$

we prove that for $k=3,5,17,179$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\ne 3,5,17,179$.

From (2) and (3) we have

$$J_2(\omega)\ne 0 \tag{8}$$

We prove that for $k\ne 3,5,17,179$,

(1) contain infinitely many prime solutions

The New Prime theorem（753）

$$P, jP^{1426}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1426}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1426}+k-j(j=1,\cdots,k-1). \tag{1}$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \tag{2}$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1426}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \tag{3}$$

If $\chi(P)\le P-2$ then from (2) and (3) we have

$$J_2(\omega)\ne 0 \tag{4}$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1426}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \tag{5}$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\ne 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\le N: jP^{1426}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1426)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \tag{6}$$

where $\phi(\omega)=\prod_P (P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\geq 1$.

Example 1. Let $k=3,47,1427$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3,47,1427$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\neq 3,47,1427$.

From (2) and (3) we have

$$J_2(\omega)\neq 0 \quad (8)$$

We prove that for $k\neq 3,47,1427$,

(1) contain infinitely many prime solutions

The New Prime theorem（754）

$$P, jP^{1428}+k-j (j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1428}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1428}+k-j (j=1,\cdots,k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1428}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\leq P-2$ then from (2) and (3) we have

$$J_2(\omega)\neq 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1428}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\neq 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\{P\le N: jP^{1428}+k-j=prime\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1428)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\ge 1$.

Example 1. Let $k=3,7,13,29,43,103,239,1429$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3,7,13,29,43,103,239,1429$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\ne 3,7,13,29,43,103,239,1429$.

From (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (8)$$

We prove that for $k\ne 3,7,13,29,43,103,239,1429$,

(1) contain infinitely many prime solutions

The New Prime theorem（755）

$$P, jP^{1430}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1430}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1430}+k-j(j=1,\cdots,k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1430}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\le P-2$ then from (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1430}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\neq 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\leq N: jP^{1430}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1430)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\geq 1$.

Example 1. Let $k=3,11,23,131$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3,11,23,131$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\neq 3,11,23,131$.

From (2) and (3) we have

$$J_2(\omega)\neq 0 \quad (8)$$

We prove that for $k\neq 3,11,23,131$,

(1) contain infinitely many prime solutions

The New Prime theorem（756）

$$P, jP^{1432}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1432}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1432}+k-j(j=1,\cdots,k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1432}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\leq P-2$ then from (2) and (3) we have

$$J_2(\omega)\neq 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1432}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\neq 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\leq N: jP^{1432}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1432)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\geq 1$.

Example 1. Let $k=3,5,359,1433$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3,5,359,1433$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\neq 3,5,359,1433$.

From (2) and (3) we have

$$J_2(\omega)\neq 0 \quad (8)$$

We prove that for $k\neq 3,5,359,1433$,

(1) contain infinitely many prime solutions

The New Prime theorem（757）

$$P, jP^{1434}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1434}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1434}+k-j(j=1,\cdots,k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1434}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\leq P-2$ then from (2) and (3) we have

$$J_2(\omega)\neq 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1434}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\neq 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\leq N: jP^{1434}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1434)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\geq 1$.

Example 1. Let $k=3,7,479$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3,7,479$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\neq 3,7,479$.

From (2) and (3) we have

$$J_2(\omega)\neq 0 \quad (8)$$

We prove that for $k\neq 3,7,479$,

(1) contain infinitely many prime solutions

The New Prime theorem（758）

$$P, jP^{1436}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1436}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1436}+k-j(j=1,\cdots,k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1436}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\leq P-2$ then from (2) and (3) we have

$$J_2(\omega)\neq 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes

P such that each of $jp^{1436}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \qquad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\neq 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\le N: jP^{1436}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1436)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \qquad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\ge 1$.

Example 1. Let $k=3,5,719$. From (2) and(3) we have

$$J_2(\omega)=0 \qquad (7)$$

we prove that for $k=3,5,719$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\neq 3,5,719$.

From (2) and (3) we have

$$J_2(\omega)\neq 0 \qquad (8)$$

We prove that for $k\neq 3,5,719$,

(1) contain infinitely many prime solutions

The New Prime theorem（759）

$$P, jP^{1438}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1438}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1438}+k-j(j=1,\cdots,k-1). \qquad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \qquad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1438}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \qquad (3)$$

If $\chi(P)\le P-2$ then from (2) and (3) we have

$$J_2(\omega)\neq 0 \qquad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1438}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\neq 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\leq N: jP^{1438}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1438)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\geq 1$.

Example 1. Let $k=3,1439$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3,1439$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\neq 3,1439$.

From (2) and (3) we have

$$J_2(\omega)\neq 0 \quad (8)$$

We prove that for $k\neq 3,1439$,

(1) contain infinitely many prime solutions

The New Prime theorem（760）

$$P, jP^{1440}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1440}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1440}+k-j(j=1,\cdots,k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1440}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\leq P-2$ then from (2) and (3) we have

$$J_2(\omega) \neq 0 \tag{4}$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1440}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \tag{5}$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\neq 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\leq N: jP^{1440}+k-j=prime\right\}\right| \sim \frac{J_2(\omega)\omega^{k-1}}{(1440)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \tag{6}$$

where $\phi(\omega)=\prod_P (P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\geq 1$.

Example 1. Let $k=3,5,7,11,13,17,19,31,37,41,61,73,97,241$. From (2) and(3) we have

$$J_2(\omega)=0 \tag{7}$$

we prove that for $k=3,5,7,11,13,17,19,31,37,41,61,73,97,241$,
(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\neq 3,5,7,11,13,17,19,31,37,41,61,73,97,241$.
From (2) and (3) we have

$$J_2(\omega)\neq 0 \tag{8}$$

We prove that for $k\neq 3,5,7,11,13,17,19,31,37,41,61,73,97,241$,
(1) contain infinitely many prime solutions

The New Prime theorem（761）

$$P, jP^{1442}+k-j (j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1442}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1442}+k-j (j=1,\cdots,k-1). \tag{1}$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \tag{2}$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1442}+k-j\right]\equiv 0 \pmod P), q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\le P-2$ then from (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1442}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\ne 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\le N: jP^{1442}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1442)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\ge 1$.

Example 1. Let $k=3$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\ne 3$.

From (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (8)$$

We prove that for $k\ne 3$,

(1) contain infinitely many prime solutions

The New Prime theorem（762）

$$P, jP^{1444}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1444}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1444}+k-j(j=1,\cdots,k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1444}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\le P-2$ then from (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1444}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\ne 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\le N: jP^{1444}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1444)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\ge 1$.

Example 1. Let $k=3,5$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3,5$,
(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\ne 3,5$.
From (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (8)$$

We prove that for $k\ne 3,5$,
(1) contain infinitely many prime solutions

The New Prime theorem（763）

$$P, jP^{1446}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1446}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1446}+k-j(j=1,\cdots,k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1446}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\le P-2$ then from (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1446}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\ne 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\le N: jP^{1446}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1446)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\ge 1$.

Example 1. Let $k=3,7,1447$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3,7,1447$,
(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\ne 3,7,1447$.
From (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (8)$$

We prove that for $k\ne 3,7,1447$,
(1) contain infinitely many prime solutions

The New Prime theorem（764）

$$P, jP^{1448}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1448}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1448}+k-j(j=1,\cdots,k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1448}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\le P-2$ then from (2) and (3) we have

$$J_2(\omega)\neq 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1448}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\neq 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\le N: jP^{1448}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1448)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\ge 1$.

Example 1. Let $k=3,5$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3,5$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\neq 3,5$.

From (2) and (3) we have

$$J_2(\omega)\neq 0 \quad (8)$$

We prove that for $k\neq 3,5$,

(1) contain infinitely many prime solutions

The New Prime theorem（765）

$$P, jP^{1450}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1450}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1450} + k - j (j = 1, \cdots, k-1) \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega) = \prod_{P>2} [P - 1 - \chi(P)] \quad (2)$$

where $\omega = \prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1} \left[jq^{1450} + k - j \right] \equiv 0 \pmod{P}, q = 1, \cdots, P-1 \quad (3)$$

If $\chi(P) \le P - 2$ then from (2) and (3) we have

$$J_2(\omega) \ne 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of jp^{1450} + $k - j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P) = P - 1$. Substituting it into (2) we have

$$J_2(\omega) = 0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega) \ne 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2) = \left| \left\{ P \le N : jP^{1450} + k - j = prime \right\} \right| \sim \frac{J_2(\omega)\omega^{k-1}}{(1450)^{k-1}\phi^k(\omega)} \frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega) = \prod_P (P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0, 2) \ge 1$.

Example 1. Let $k = 3, 11, 59, 1451$. From (2) and(3) we have

$$J_2(\omega) = 0 \quad (7)$$

we prove that for $k = 3, 11, 59, 1451$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k \ne 3, 11, 59, 1451$.

From (2) and (3) we have

$$J_2(\omega) \ne 0 \quad (8)$$

We prove that for $k \ne 3, 11, 59, 1451$,

(1) contain infinitely many prime solutions

The New Prime theorem（766）

$$P, jP^{1452} + k - j (j = 1, \cdots, k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1452} + k - j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1452}+k-j(j=1,\cdots,k-1) \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1452}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\le P-2$ then from (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1452}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\ne 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\le N: jP^{1452}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1452)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\ge 1$.

Example 1. Let $k=3,5,7,13,23,67,1453$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3,5,7,13,23,67,1453$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\ne 3,5,7,13,23,67,1453$.

From (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (8)$$

We prove that for $k\ne 3,5,7,13,23,67,1453$,

(1) contain infinitely many prime solutions

The New Prime theorem（767）

$$P, jP^{1454}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1454}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1454}+k-j(j=1,\cdots,k-1) \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1454}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\le P-2$ then from (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1454}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\ne 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\le N: jP^{1454}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1454)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\ge 1$.

Example 1. Let $k=3$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\ne 3$.

From (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (8)$$

We prove that for $k\ne 3$,

(1) contain infinitely many prime solutions

The New Prime theorem（768）

$$P, jP^{1456}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1456}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1456}+k-j(j=1,\cdots,k-1) \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1456}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\le P-2$ then from (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1456}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\ne 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\le N: jP^{1456}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1456)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\ge 1$.

Example 1. Let $k=3,5,17,29,53,113$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3,5,17,29,53,113$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\ne 3,5,17,29,53,113$.

From (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (8)$$

We prove that for $k\ne 3,5,17,29,53,113$,

(1) contain infinitely many prime solutions

The New Prime theorem（769）

$$P, jP^{1458}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1458}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1458}+k-j(j=1,\cdots,k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1458}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\le P-2$ then from (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1458}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\ne 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\le N: jP^{1458}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1458)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\ge 1$.

Example 1. Let $k=3,7,19,163,487,1459$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3,7,19,163,487,1459$,
(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\ne 3,7,19,163,487,1459$.
From (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (8)$$

We prove that for $k\ne 3,7,19,163,487,1459$,
(1) contain infinitely many prime solutions

The New Prime theorem（770）

$$P, jP^{1460}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1460}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1460}+k-j(j=1,\cdots,k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1460}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\le P-2$ then from (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1460}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\ne 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\le N: jP^{1460}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1460)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\ge 1$.

Example 1. Let $k=3,5,11,293$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3,5,11,293$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\ne 3,5,11,293$.

From (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (8)$$

We prove that for $k\ne 3,5,11,293$,

(1) contain infinitely many prime solutions

The New Prime theorem（771）

$$P, jP^{1462}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1462}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1462}+k-j(j=1,\cdots,k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1462}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\le P-2$ then from (2) and (3) we have

$$J_2(\omega)\neq 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1462}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\neq 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\le N: jP^{1462}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1462)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\ge 1$.

Example 1. Let $k=3$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\neq 3$.

From (2) and (3) we have

$$J_2(\omega)\neq 0 \quad (8)$$

We prove that for $k\neq 3$,

(1) contain infinitely many prime solutions

The New Prime theorem（772）

$$P, jP^{1464}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1464}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1464}+k-j(j=1,\cdots,k-1) \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1464}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\le P-2$ then from (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1464}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\ne 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\le N: jP^{1464}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1464)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\ge 1$.

Example 1. Let $k=3,5,7,13,367,733$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3,5,7,13,367,733$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\ne 3,5,7,13,367,733$.

From (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (8)$$

We prove that for $k\ne 3,5,7,13,367,733$,

(1) contain infinitely many prime solutions

The New Prime theorem（773）

$$P, jP^{1466}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1466}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1466}+k-j(j=1,\cdots,k-1) \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1466}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\le P-2$ then from (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1466}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\ne 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\le N: jP^{1466}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1466)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\ge 1$.

Example 1. Let $k=3$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\ne 3$.

From (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (8)$$

We prove that for $k \neq 3$,
(1) contain infinitely many prime solutions

The New Prime theorem（774）

$$P, jP^{1468}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1468}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1468}+k-j(j=1,\cdots,k-1) \quad (1)$$

contain infinitely many prime solutions and no prime solutions.
Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1468}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\leq P-2$ then from (2) and (3) we have

$$J_2(\omega)\neq 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1468}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\neq 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\leq N: jP^{1468}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1468)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\geq 1$.

Example 1. Let $k=3,5$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3,5$,
(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\neq 3,5$.

From (2) and (3) we have

$$J_2(\omega) \neq 0 \quad (8)$$

We prove that for $k \neq 3,5$,
(1) contain infinitely many prime solutions

The New Prime theorem（775）

$$P, jP^{1470} + k - j (j = 1, \cdots, k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1470} + k - j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1470} + k - j (j = 1, \cdots, k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.
Proof. We have Jiang function [1,2]

$$J_2(\omega) = \prod_{P>2} [P - 1 - \chi(P)] \quad (2)$$

where $\omega = \prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1} \left[jq^{1470} + k - j \right] \equiv 0 \pmod{P}, q = 1, \cdots, P-1 \quad (3)$$

If $\chi(P) \leq P - 2$ then from (2) and (3) we have

$$J_2(\omega) \neq 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1470} + k - j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P) = P - 1$. Substituting it into (2) we have

$$J_2(\omega) = 0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega) \neq 0$ then we have asymptotic formula [1,2]

$$\pi_k(N, 2) = \left| \left\{ P \leq N : jP^{1470} + k - j = prime \right\} \right| \sim \frac{J_2(\omega)\omega^{k-1}}{(1470)^{k-1}\phi^k(\omega)} \frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega) = \prod_P (P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0, 2) \geq 1$.

Example 1. Let $k = 3, 7, 11, 31, 43, 71, 211, 491, 1471$. From (2) and(3) we have

$$J_2(\omega) = 0 \quad (7)$$

we prove that for $k = 3, 7, 11, 31, 43, 71, 211, 491, 1471$,
(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k \neq 3,7,11,31,43,71,211,491,1471$.

From (2) and (3) we have

$$J_2(\omega) \neq 0 \quad (8)$$

We prove that for $k \neq 3,7,11,31,43,71,211,491,1471$,

(1) contain infinitely many prime solutions

The New Prime theorem（776）

$$P, jP^{1472} + k - j (j = 1, \cdots, k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1472} + k - j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1472} + k - j (j = 1, \cdots, k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega) = \prod_{P>2} [P - 1 - \chi(P)] \quad (2)$$

where $\omega = \prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1} \left[jq^{1472} + k - j \right] \equiv 0 \pmod P, q = 1, \cdots, P-1 \quad (3)$$

If $\chi(P) \leq P - 2$ then from (2) and (3) we have

$$J_2(\omega) \neq 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1472} + k - j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P) = P - 1$. Substituting it into (2) we have

$$J_2(\omega) = 0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega) \neq 0$ then we have asymptotic formula [1,2]

$$\pi_k(N, 2) = \left| \left\{ P \leq N : jP^{1472} + k - j = prime \right\} \right| \sim \frac{J_2(\omega)\omega^{k-1}}{(1472)^{k-1}\phi^k(\omega)} \frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega) = \prod_P (P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0, 2) \geq 1$.

Example 1. Let $k = 3,5,17,47$. From (2) and(3) we have

$$J_2(\omega) = 0 \quad (7)$$

we prove that for $k=3,5,17,47$,
(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k \neq 3,5,17,47$.
From (2) and (3) we have

$$J_2(\omega) \neq 0 \quad (8)$$

We prove that for $k \neq 3,5,17,47$,
(1) contain infinitely many prime solutions

The New Prime theorem（777）

$$P, jP^{1474}+k-j (j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1474}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1474}+k-j (j=1,\cdots,k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.
Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1474}+k-j\right] \equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P) \leq P-2$ then from (2) and (3) we have

$$J_2(\omega) \neq 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1474}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega) \neq 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P \leq N: jP^{1474}+k-j=prime\right\}\right| \sim \frac{J_2(\omega)\omega^{k-1}}{(1474)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2) \geq 1$.

Example 1. Let $k=3,23$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3,23$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\neq 3,23$.

From (2) and (3) we have

$$J_2(\omega)\neq 0 \quad (8)$$

We prove that for $k\neq 3,23$,

(1) contain infinitely many prime solutions

The New Prime theorem（778）

$$P, jP^{1476}+k-j (j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1476}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1476}+k-j (j=1,\cdots,k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1476}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\leq P-2$ then from (2) and (3) we have

$$J_2(\omega)\neq 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1476}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\neq 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\leq N: jP^{1476}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1476)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\geq 1$.

Example 1. Let $k = 3,5,7,13,19,37,83,739$. From (2) and(3) we have

$$J_2(\omega) = 0 \tag{7}$$

we prove that for $k = 3,5,7,13,19,37,83,739$,
(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k \neq 3,5,7,13,19,37,83,739$.
From (2) and (3) we have

$$J_2(\omega) \neq 0 \tag{8}$$

We prove that for $k \neq 3,5,7,13,19,37,83,739$,
(1) contain infinitely many prime solutions

The New Prime theorem（779）

$$P, jP^{1478} + k - j (j = 1, \cdots, k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1478} + k - j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1478} + k - j (j = 1, \cdots, k-1). \tag{1}$$

contain infinitely many prime solutions and no prime solutions.
Proof. We have Jiang function [1,2]

$$J_2(\omega) = \prod_{P>2} [P - 1 - \chi(P)] \tag{2}$$

where $\omega = \prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1} \left[jq^{1478} + k - j \right] \equiv 0 \pmod P, q = 1, \cdots, P-1 \tag{3}$$

If $\chi(P) \leq P - 2$ then from (2) and (3) we have

$$J_2(\omega) \neq 0 \tag{4}$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1478} + k - j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P) = P - 1$. Substituting it into (2) we have

$$J_2(\omega) = 0 \tag{5}$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega) \neq 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2) = \left| \left\{ P \leq N : jP^{1478} + k - j = prime \right\} \right| \sim \frac{J_2(\omega)\omega^{k-1}}{(1478)^{k-1}\phi^k(\omega)} \frac{N}{\log^k N} \tag{6}$$

where $\phi(\omega) = \prod_P (P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\ge 1$.

Example 1. Let $k=3$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\ne 3$.

From (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (8)$$

We prove that for $k\ne 3$,

(1) contain infinitely many prime solutions

The New Prime theorem（780）

$$P, jP^{1480}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1480}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1480}+k-j(j=1,\cdots,k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1480}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\le P-2$ then from (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1480}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\ne 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\le N: jP^{1480}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1480)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\geq 1$.

Example 1. Let $k=3,5,11,41,149,1481$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3,5,11,41,149,1481$,
(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\neq 3,5,11,41,149,1481$.
From (2) and (3) we have

$$J_2(\omega)\neq 0 \quad (8)$$

We prove that for $k\neq 3,5,11,41,149,1481$,
(1) contain infinitely many prime solutions

The New Prime theorem（781）

$$P, jP^{1482}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1482}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1482}+k-j(j=1,\cdots,k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.
Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1482}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\leq P-2$ then from (2) and (3) we have

$$J_2(\omega)\neq 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1482}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\neq 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\le N: jP^{1482}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1482)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\ge 1$.

Example 1. Let $k=3,7,79,1483$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3,7,79,1483$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\ne 3,7,79,1483$.

From (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (8)$$

We prove that for $k\ne 3,7,79,1483$,

(1) contain infinitely many prime solutions

The New Prime theorem（782）

$$P, jP^{1484}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1484}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1484}+k-j(j=1,\cdots,k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1484}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\le P-2$ then from (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1484}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\neq 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\{P\leq N: jP^{1484}+k-j=prime\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1484)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\geq 1$.

Example 1. Let $k=3,5,29,107,743$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3,5,29,107,743$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\neq 3,5,29,107,743$.

From (2) and (3) we have

$$J_2(\omega)\neq 0 \quad (8)$$

We prove that for $k\neq 3,5,29,107,743$,

(1) contain infinitely many prime solutions

The New Prime theorem（783）

$$P, jP^{1486}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1486}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1486}+k-j(j=1,\cdots,k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1486}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\leq P-2$ then from (2) and (3) we have

$$J_2(\omega)\neq 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1486}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\neq 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\le N: jP^{1486}+k-j=prime\right\}\right|\sim \frac{J_2(\omega)\omega^{k-1}}{(1486)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\ge 1$.

Example 1. Let $k=3,1487$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3,1487$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\neq 3,1487$.

From (2) and (3) we have

$$J_2(\omega)\neq 0 \quad (8)$$

We prove that for $k\neq 3,1487$,

(1) contain infinitely many prime solutions

The New Prime theorem（784）

$$P, jP^{1488}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1488}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1488}+k-j(j=1,\cdots,k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1488}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\le P-2$ then from (2) and (3) we have

$$J_2(\omega)\neq 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1488}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \tag{5}$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\neq 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\le N: jP^{1488}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1488)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \tag{6}$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\ge 1$.

Example 1. Let $k=3,5,7,13,17,373,1489$. From (2) and(3) we have

$$J_2(\omega)=0 \tag{7}$$

we prove that for $k=3,5,7,13,17,373,1489$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\neq 3,5,7,13,17,373,1489$.

From (2) and (3) we have

$$J_2(\omega)\neq 0 \tag{8}$$

We prove that for $k\neq 3,5,7,13,17,373,1489$,

(1) contain infinitely many prime solutions

The New Prime theorem（785）

$$P, jP^{1490}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1490}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1490}+k-j(j=1,\cdots,k-1). \tag{1}$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \tag{2}$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1490}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \tag{3}$$

If $\chi(P)\le P-2$ then from (2) and (3) we have

$$J_2(\omega)\neq 0 \tag{4}$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes

P such that each of $jp^{1490}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\neq 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\leq N: jP^{1490}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1490)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\geq 1$.

Example 1. Let $k=3,11$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3,11$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\neq 3,11$.

From (2) and (3) we have

$$J_2(\omega)\neq 0 \quad (8)$$

We prove that for $k\neq 3,11$,

(1) contain infinitely many prime solutions

The New Prime theorem（786）

$$P, jP^{1492}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1492}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1492}+k-j(j=1,\cdots,k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1492}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\leq P-2$ then from (2) and (3) we have

$$J_2(\omega)\neq 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1492}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\neq 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\{P\le N: jP^{1492}+k-j=prime\}\right| \sim \frac{J_2(\omega)\omega^{k-1}}{(1492)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P (P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\ge 1$.

Example 1. Let $k=3,5,1493$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3,5,1493$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\neq 3,5,1493$.

From (2) and (3) we have

$$J_2(\omega)\neq 0 \quad (8)$$

We prove that for $k\neq 3,5,1493$,

(1) contain infinitely many prime solutions

The New Prime theorem（787）

$$P, jP^{1494}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1494}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1494}+k-j(j=1,\cdots,k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1494}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P) \le P-2$ then from (2) and (3) we have

$$J_2(\omega) \ne 0 \tag{4}$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1494}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \tag{5}$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega) \ne 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P \le N : jP^{1494}+k-j=prime\right\}\right| \sim \frac{J_2(\omega)\omega^{k-1}}{(1494)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \tag{6}$$

where $\phi(\omega)=\prod_P (P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2) \ge 1$.

Example 1. Let $k=3,7,19,167,499$. From (2) and(3) we have

$$J_2(\omega)=0 \tag{7}$$

we prove that for $k=3,7,19,167,499$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k \ne 3,7,19,167,499$.

From (2) and (3) we have

$$J_2(\omega) \ne 0 \tag{8}$$

We prove that for $k \ne 3,7,19,167,499$,

(1) contain infinitely many prime solutions

The New Prime theorem（788）

$$P, jP^{1496}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1496}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1496}+k-j(j=1,\cdots,k-1). \tag{1}$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \tag{2}$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1496}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\le P-2$ then from (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1496}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\ne 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\le N: jP^{1496}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1496)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\ge 1$.

Example 1. Let $k=3,5,23,89,137$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3,5,23,89,137$,
(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\ne 3,5,23,89,137$.

From (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (8)$$

We prove that for $k\ne 3,5,23,89,137$,
(1) contain infinitely many prime solutions

The New Prime theorem（789）

$$P, jP^{1498}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1498}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1498}+k-j(j=1,\cdots,k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.
Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \quad (2)$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1498}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \quad (3)$$

If $\chi(P)\le P-2$ then from (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (4)$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1498}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \quad (5)$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\ne 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\le N: jP^{1498}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1498)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \quad (6)$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\ge 1$.

Example 1. Let $k=3,1499$. From (2) and(3) we have

$$J_2(\omega)=0 \quad (7)$$

we prove that for $k=3,1499$,
(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\ne 3,1499$.
From (2) and (3) we have

$$J_2(\omega)\ne 0 \quad (8)$$

We prove that for $k\ne 3,1499$,
(1) contain infinitely many prime solutions

The New Prime theorem（790）

$$P, jP^{1500}+k-j(j=1,\cdots,k-1)$$

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Abstract

Using Jiang function we prove that $jP^{1500}+k-j$ contain infinitely many prime solutions and no prime solutions.

Theorem. Let k be a given odd prime.

$$P, jP^{1500}+k-j(j=1,\cdots,k-1). \quad (1)$$

contain infinitely many prime solutions and no prime solutions.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_{P>2}[P-1-\chi(P)] \tag{2}$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{j=1}^{k-1}\left[jq^{1500}+k-j\right]\equiv 0 \pmod P, q=1,\cdots,P-1 \tag{3}$$

If $\chi(P)\le P-2$ then from (2) and (3) we have

$$J_2(\omega)\ne 0 \tag{4}$$

We prove that (1) contain infinitely many prime solutions that is for any k there are infinitely many primes P such that each of $jp^{1500}+k-j$ is a prime.

Using Fermat's little theorem from (3) we have $\chi(P)=P-1$. Substituting it into (2) we have

$$J_2(\omega)=0 \tag{5}$$

We prove that (1) contain no prime solutions [1,2]

If $J_2(\omega)\ne 0$ then we have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\left\{P\le N: jP^{1500}+k-j=prime\right\}\right|\sim\frac{J_2(\omega)\omega^{k-1}}{(1500)^{k-1}\phi^k(\omega)}\frac{N}{\log^k N} \tag{6}$$

where $\phi(\omega)=\prod_P(P-1)$.

From (6) we are able to find the smallest solution $\pi_k(N_0,2)\ge 1$.

Example 1. Let $k=3,5,7,11,13,31,61,101,151,251,751$. From (2) and(3) we have

$$J_2(\omega)=0 \tag{7}$$

we prove that for $k=3,5,7,11,13,31,61,101,151,251,751$,

(1) contain no prime solutions. 1 is not a prime.

Example 2. Let $k\ne 3,5,7,11,13,31,61,101,151,251,751$.

From (2) and (3) we have

$$J_2(\omega)\ne 0 \tag{8}$$

We prove that for $k\ne 3,5,7,11,13,31,61,101,151,251,751$,

(1) contain infinitely many prime solutions

Remark. The prime number theory is basically to count the Jiang function $J_{n+1}(\omega)$ and Jiang prime k-tuple singular series $\sigma(J)=\frac{J_2(\omega)\omega^{k-1}}{\phi^k(\omega)}=\prod_P\left(1-\frac{1+\chi(P)}{P}\right)(1-\frac{1}{P})^{-k}$ [1,2], which can count the number of prime numbers. The prime distribution is not random. But Hardy-Littlewood prime k-tuple singular series $\sigma(H)=\prod_P\left(1-\frac{\nu(P)}{P}\right)(1-\frac{1}{P})^{-k}$ is false [3-17], which cannot count the number of prime numbers[3].

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Szemerédi's theorem does not directly to the primes, because it cannot count the number of primes. Cramér's random model cannot prove any prime problems. The probability of $1/\log N$ of being prime is false. Assuming that the events "P is prime", "$P+2$ is prime" and "$P+4$ is prime" are independent, we conclude that P, $P+2$, $P+4$ are simultaneously prime with probability about $1/\log^3 N$. There are about $N/\log^3 N$ primes less than N. Letting $N\to\infty$ we obtain the prime conjecture, which is false. The tool of additive prime number theory is basically the Hardy-Littlewood prime tuples conjecture, but cannot prove and count any prime problems[6].

Mathematicians have tried in vain to discover some order in the sequence of prime numbers but we have every reason to believe that there are some mysteries which the human mind will never penetrate.

Leonhard Euler(1707-1783)

It will be another million years, at least, before we understand the primes.

Paul Erdos(1913-1996)

Of course, the primes are a deterministic set of integers, not a random one, so the predictions given by random models are not rigorous (Terence Tao, Structure and randomness in the prime numbers, preprint). Erdos and Turán(1936) contributed to probabilistic number theory, where the primes are treated as if they were random, which generates Szemerédi's theorem (1975) and Green-Tao theorem(2004). But they cannot actually prove and count any simplest prime examples: twin primes and Goldbach's conjecture. They don't know what prime theory means, only conjectures.

1991 年 10 月 25 日蒋春暄用他发明新数学证明费马大定理。设指数$n=3P$，其中$P>3$是素数，有三个费马方程

$$S_1^{3P}+S_2^{3P}=1 \quad (1)$$

$$S_1^3+S_2^3=\left[\exp\left(\sum_{j=1}^{P-1}t_{3j}\right)\right]^3 \quad (2)$$

$$S_1^P+S_2^P=\left[\exp\left(t_P+t_{2P}\right)\right]^P \quad (3)$$

欧拉证明$n=3$。（1）和（2）无有理数解，因此，蒋春暄证明（3）无有理数解，对于$P>3$，这

样就全部证明费马大定理，证明 $n=3$ 或 $n=4$ 就全部证明费马大定理。1637 年费马证明 $n=4$，因此，1637 年费马证明他的最后定理。

1994 年 2 月 23 日中国著名数论家乐茂华给蒋春暄来信"……Wiles 承认失败情况实际上对您是有利的。"当时中国仍在宣传 Wiles，无人理睬蒋春暄的工作。2009 年蒋春暄因首先证明费马大定理获国外金奖，中国不承认这个金奖。

The Formula of the Particle Radii

In 1996 we found the formula of the particle radii[1-3]

$$r=1.55[m(Gev)]^{1/3} \text{ jn}, \qquad (1)$$

where 1 jn $=10^{-15}$ cm and m (Gev) is the mass of the particles.

From (1) we have that the proton and neutron radii are 1.5jn.

Pohl *et al* measure the proton diameter 3 jn[4].

We have the formula of the nuclear radii

$$r=1.2(A)^{1/3} \text{ fm}, \qquad (2)$$

where 1 fm $=10^{-13}$ cm and A is its mass number.

It is shows that (1) and (2) have the same form. The particle radii $r<5$ jn and the nuclear radii $r<7$ fm.

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