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PROOF OF GOLDBACH CONJECTURE

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ABSTRACT

This paper through the creation of "double rectangular coordinate system", within the I quadrants, each coordinate axis coordinates all constitute the infinite sets. Coordinates with infinite sets one toone correspondence between the elements within and equal relationship. With any of the sum of two odd prime Numbers (a + b) to form a square area, length for equal [illegible] of a square area A1 "square" diagonal integration method, a quarter of a square area A1 equation is derived with the definite integral equation; A1 area value of the argument as infinite generalized integral value, and deduce the equations, the Goldbach conjecture.

1. INTRODUCTION

The content of the Goldbach conjecture:

(a) Any even number greater than or equal to 6 can be represented as the sum of two odd prime Numbers.

(b) Any odd integer greater than or equal to 9 can be expressed as the sum of three odd primeNumbers.

This is the Goldbach conjecture.
Proof: Goldbach conjecture expressed as equations as follows:
(a) 2 n = a + b
(b) 2 n - 1 = a + b + c
Equation 2 n = a + b (a) must satisfy the following conditions:
Firstly, the n is greater than or equal to 3 any element of the set of natural Numbers is infinite.

Set: n 3 natural Numbers or infinite collection of symbols for 2n∊2(N+≧3), n ∊ n + ≧ 3.
Second: a and b is odd primes infinite any two elements in the collection. a and b in the odd primes within the infinite set arbitrary values.

Set: odd primes infinite collection of symbols for "Jss", a ∊ Jss, ∊ b Jss
Equations: 2 n = a + b satisfies conditions: a ∈ Jss, ∈ b Jss, a 3 or higher or 3 b,
N ∊ n + ≧ 3, n ∊ {3, 4, 5...}, 2 ∊ N (N + 2 ≧ 3), conform to any an even number greater than or equal to 6 can be expressed as the sum of two odd prime Numbers.
Equation (b) 2 n - 1 = a + b + c conditions must be satisfied:
Firstly, the n is greater than or equal to 5 infinite any one element of a set of natural Numbers.

Set: n p 5 natural Numbers is infinite collection of symbols for "n + ≧ 5";
N ∊ n + ≧ 5
Second: a, b, c are odd prime Numbers is infinite any three elements in the collection, a, b, c in odd primes infinite set arbitrary values.
Set odd primes infinite sets symbol for "Jss"

A ∈ Jss, ∈ b Jss, c ∈ Jss
Equations, (b) (2 n - 1 = a + b + c conditions must be satisfied:
A 3 or higher, b 3 or higher, c 3 or higher; A ∈ Jss, ∈ b Jss
C ∈ Jss, n ∈ n + ≧ 5, n ∈ {5, 6, 7, 8...}, conform to any odd integer greater than or equal to 9, can be expressed as the sum of three odd prime Numbers.

2. Prove Goldbach conjecture: create a new "double rectangular coordinate system is shown infigure 1.

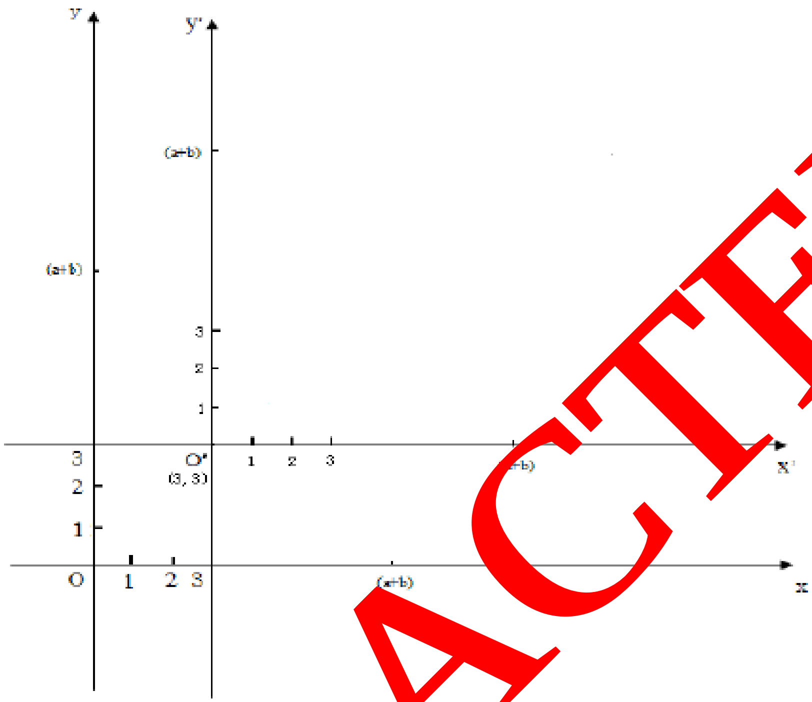

Figure-1

2.1 Double rectangular coordinate system construction steps:
1, based on the original xoy Cartesian coordinate system
2, OS x axial oy axis vertical horizontal move to the position of the odd prime number 3
3, oy axial OS x axis direction perpendicular to the horizontal displacement to the position of the odd prime number 3
4, OS x axis and oy axis perpendicular intersection in the origin of the new position of the odd prime
number 3, in the original coordinates xoy within the first quadrant, established a new coordinate system x, 'o, y'
Xoy is the original coordinate system and the new coordinate system x, 'o, y', both together constitute "double rectangular coordinate system", as shown in figure 1.

2.2 in double I quadrant in the rectangular coordinate system, the axes of the coordinate values and the relationship between the corresponding collections, meet such as under the given conditions:
1, on the OS x axis and oy shaft:
There is one-to-one correspondence and equal by all the natural Numbers for infinite sets of elements. As "N". There is a one-to-one correspondence and equal infinite set by all the evennumber of elements. As "2 n left". There is a one-to-one correspondence and equal by all the prime Numbers is infinite sets of elements. As "Ss".

2, in o, x and o, 'y' shaft: There is a one-to-one correspondence and equal by natural number (positive integer) is greater than or equal to 3 for infinite sets of elements. As N + 3 or more or (Z +

3 or higher) There is one-to-one correspondence and equal by all the odd prime number for the infinite sets of elements. Remember to make "the Jss" There is a one-to-one correspondence and equal by any of the sum of two odd prime Numbers (a + b) for the infinite sets of elements. As "2 (N+ 3 or higher)" There is one-to-one correspondence and equal by three odd prime number (a + b + c) is greater than or equal to the sum of nine odd for infinite sets of elements. As "Js 9 or higher. There is a one-to-one correspondence and equal by the sum of any three odd prime, plus 1, (a + b + c + 1) for the infinite sets of elements. As "2

2.3 Within the I quadrant, the coordinate values with an infinite set of relationships between elements known to satisfy the following conditions:

1, the coordinate values on each axis, with its corresponding one to one correspondence between infinite sets of elements and equal relationship. Axes coordinate values of the geometry is the performance of a zero dimensional "points".

2, any of the sum of two odd prime Numbers (a + b) on each axis of coordinates with the corresponding infinite collection there is one-to-one correspondence between the elements within and equal relationship. (a + b) on the axis of coordinates of the geometric figure show the onedimensional"line".

3, in the x 'o, y', (a + b) to a side length of square area, with any (a + b) is a side length of square area, there is a one-to-one correspondence and equal relationship, which can form an infinite set ofan element. (a + b) for the length of the square of the geometric figure is shown as a twodimensional "face".

2.4 Within I quadrant, with any of the sum of two odd prime Numbers for a square side length (a + b), consisting of a square area A, equation of equation is derived.

∵ a∈Jss ; b∈Jss a ≥ 3 b ≥ 3; known: x = (a + b), y = (a + b); Function: y = x; A = 2S1 ; (a+b) ≥ 6; (a + b) ∈ 2 (N^+≥3);

As A special curved trapezoid area, y = x on [0, (a + b)] on integrable. In x axis on [0, (a + b)], by y = (a + b) and x axis and y = x of a right triangle S1 in y axis on [0, (a + b)], composed of x = (a + b), and y = x and y axis right triangle S2 of side length for (a + b) a. square area (square area a is equal to 2 times the right triangle area of S_1).

A= S_1 +S_2;

According to Newton, Leibniz formula:

If the function f (x) is continuous on [a, b], and there is the function f (x), then f (x) integrable on [a, b], and B (upper limit) a (lower limit) f (x) dx = f (b) - (a) f

Launch function y = x in [0, (a + b)] on continuously, and the function F (x) = x2/2, the function y = x in [0, (a + b)] on integrable, $S_1 = \int_0^{(a+b)} x dx = x^2/2 = 1/2(a+b)^2$

∴ with definite integral is expressed as A: $A = 2S_1$; $A = 2\int_0^{(a+b)} x dx = (a+b)^2$

Proof: in [0, +∞), A generalized integral for infinite range of values.

Proof:

Known:

1, y = x is the elementary function, define the interval [0, +∞) for continuous function, meet the function continuous condition.

2, a∈Jss , b∈Jss , a≥3 , b≥3 ; y=x function $F(x)=1/2(x)^2$

(a+b)≥6 , (a+b)∈2(N^+≥3) ; By y = (a + b), x = (a + b) and y = x of a right triangle S1 of the generalized integral, F (x) = 1/2 x2 is an antiderivative of y = x,

$$S_1 = \int_0^{+\infty} x\,dx = \lim_{(a+b)\to+\infty} \int_0^{(a+b)} x\,dx = \lim_{x\to+\infty} \left(X^2/2 \right) = \lim_{(a+b)\to+\infty} 1/2(a+b)^2$$

$=1/2(a+b)^2$

$A=2S_1$;

$$A = 2\int_0^{+\infty} x\,dx = \lim_{(a+b)\to+\infty} \int_0^{+\infty} 2x\,dx = \lim_{x\to+\infty} 2[X^2/2] = \lim_{(a+b)\to+\infty} 2[(a+b)^2/2] = (a+b)^2$$

Conclusion 1:

In any of the sum of two odd prime Numbers (a + b) to the area of the side length of square a is of value as the limit of infinite generalized integral, as shown in figure 2

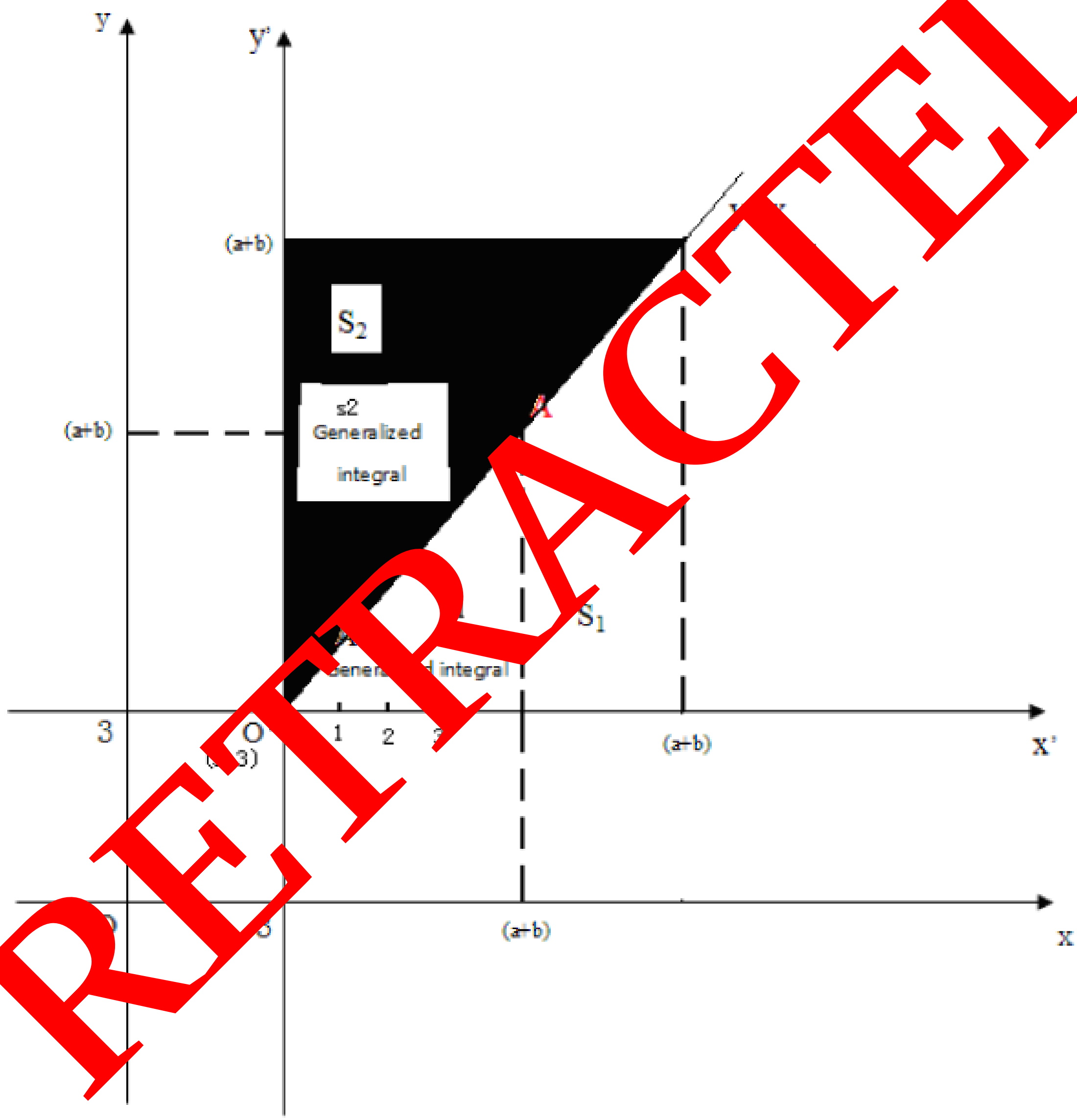

Figure-2

2.5 Within I quadrant to (a + b) / 2 is a side length of the midpoint coordinates, the a is divided into four small

Square area (see figure 3),

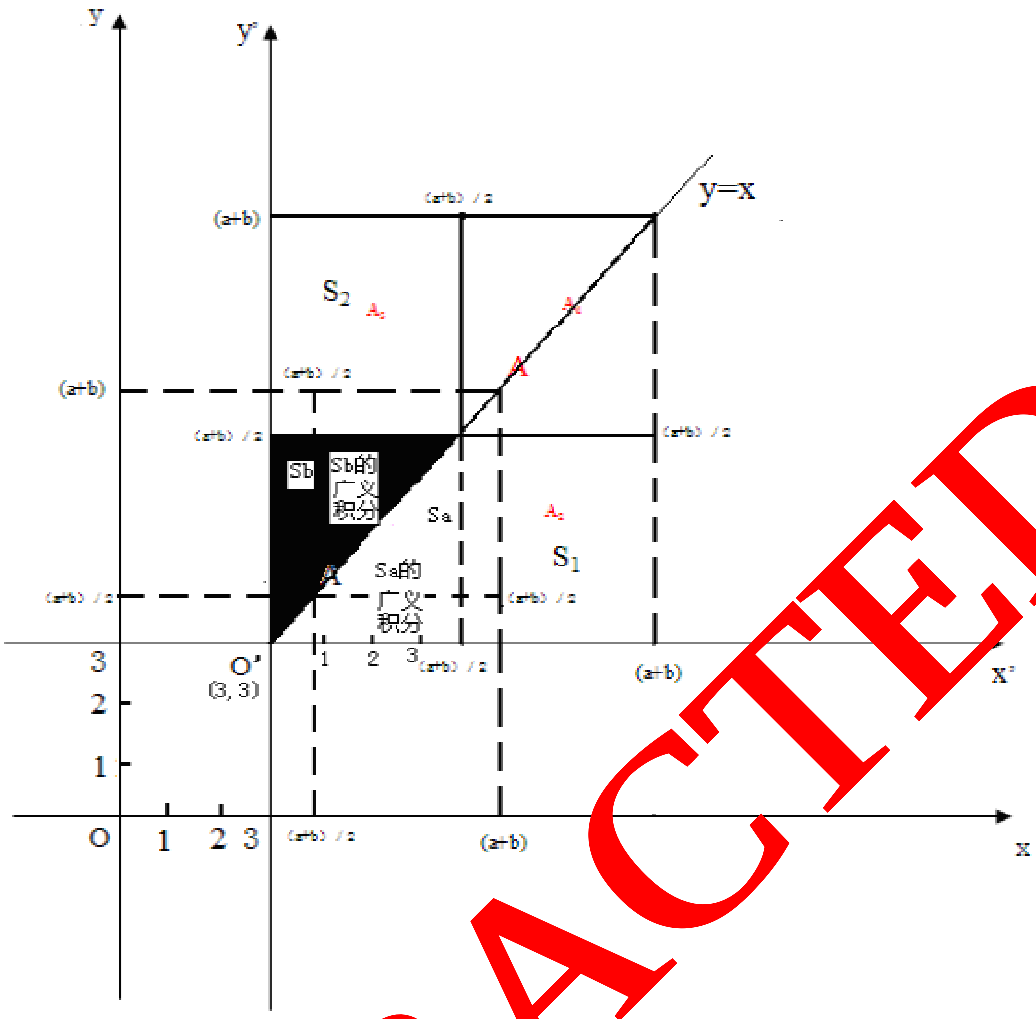

Figure-3

Make the $A_1 = A_2 = A_3 = A_4 =$ [illegible] qua[illegible]r [illegible], s[illegible]quare area A1 equations is derived.
$y = (a+b) /2$;

$X = (a+b) /2$; $y = x$; $A_1=2S_a$; $S_a= S_b$;

$a \in Jss$, $b \in Jss$, $a \geq 3$, $b \geq 3$, $(a + b) \geq 6$, $(a + b)/2 \geq 3$, $(a + b)/2 \in N^+ \geq 3$
See A_1 as a special curved trapezoid area, $y = x$ in the interval $[0, (a + b) / 2]$ on integrable, A_1 expressed in definite integral is:

$$A_1 = 2S_a , \quad S_a = \int_0^{(a+b)/2} xdx = 1/2[(a+b)/2]^2 ;$$

$$A_1 = 2\int_0^{(a+b)/2} xdx = [(a+b)/2]^2$$

Proof: in $[0, +\infty)$, A1 as the limit of infinite generalized integral.
Proof:
Known:
1, $y = x$ is the elementary function, define the interval $[0, +\infty)$ for continuous function, meet the function continuous condition.

2. $a \in Jss$, $b \in Jss$, $a \geq 3$, $b \geq 3$; $y = (a + b) /2$;
$X = (a + b) /2$; $y = x$; $A1 = 2S_a$; $S_a = S_b$;
$(a + b) \geq 6$, $(a + b)/2 \geq 3$, $(a + b)/2 \in N^+ \geq 3$

Y = x function F (x) = 1/2 (a + b)] [2/2; 2 times the value of the function 2 1/2 (a + b)] [2/2 is 9 ormore constant
(limC = C); By y = (a + b) / 2, x = (a + b) / 2, and y = x of a right triangle Sa generalized integral; Function y = x in [0, +∞) on the generalized integral. Remember to:

$$Sa = \int_0^{+\infty} x\,dx = \lim_{(a+b)/2\to+\infty} \int_0^{(a+b)/2} x\,dx = \lim_{x\to+\infty} (X^2/2) = \lim_{(a+b)\to+\infty} 1/2[(a+b)/2]^2$$

$= 1/2[(a+b)/2]^2$

$A_1 = 2S_a$

$$A_1 = 2\int_0^{+\infty} x\,dx = \lim_{(a+b)/2\to+\infty} \int_0^{(a+b)/2} 2x\,dx = \lim_{x\to+\infty} [2(X^2/2)] = \lim_{(a+b)\to+\infty} 2[(a+b)/2]^2/2$$

$= [(a+b)/2]2$

Launch of equations: $2\sqrt{A_1} = a + b$

Corollary 1:
Any of the sum of two odd prime Numbers (a + b) is equal to that the sum of two odd prime Numbers (a + b) for a quarter of a square a square of side length 2 times.

Corollary 2:
Any the sum of two odd prime Numbers (a + b) is equal to that the sum of two odd prime Numbers(a + b) for a quarter of a square of side length area A1 generalized integral value of the square root of 2 times.
Launch:

$2\sqrt{A1}=a+b$ Meet the known conditions:
$\sqrt{A1}=(a+b)/2$;
$a\in Jss$, $b\in Jss$, $a \geq 3$, $b \geq 3$
$(a + b) \geq 6$, $(a + b)/2 \geq 3$,
$(a + b)/2\in N^+\geq 3$

(1) y = x In [0, +∞) integrable, generalized integral of Sa for infinite range of integration, $\sqrt{A_1}=(a+b)/2$, $\sqrt{A_1}\in (N^+\geq 3)$ exist by A_1 (1) for the elements of infinite sets, this infinite set of A_1 elements (2) (a quarter of a square area A_1 generalized integral value of the square root of 2 times) and 2 (N + 3) or more of the elements within the one and the same.

(2)$2\sqrt{A_1}\in 2(N^+\geq 3)$,Within I quadrant, A1, 2) and 2 (N + 3) or more elements exist within the infinite sets one to one corresponding and equal relationship.

$2\sqrt{A_1}= a + b$. To prove $\sqrt{A_1}$ Any even number greater than or equal to 6 can be expressed as the sum of two odd prime Numbers (a + b).
Therefore Goldbach conjecture (a).

2.6 in the same way to prove: Within the I quadrant, any odd integer greater than or equal to 9, can be expressed as the sum of three odd prime number (a + b + c)

1, (a + b + c + 1) is derived equations for a side length of square area.
Take A look at as A special curved trapezoid, y = x in the interval [0, + 1) (A + b + c] on integrable, The known conditions:
$A = 2S1$; $a \geq 3, b \geq 3, c \geq 3$, $a\in Jss$, $b \in Jss$, $c \in Jss$, $(a+b+c) \geq 9$, $(a+b+c+1) \geq 10$; $(a+b+c+1) \in 2 (N^+\geqq 5)$, $y = (a+b+c+1)$; $x = (a+b+c+1)$; $y = x$; $A= S_1+ S_2$
A With definite integral is expressed as:
$A = 2S_1$; $S_1=\int_0^{(a+b+c+1)} x\,dx=1/2(a+b+c+1)^2$,
$A = 2\int_0^{(a+b+c+1)} x\,dx=(a+b+c+1)^2$

Proof: A in [0, +∞) as the limit of infinite generalized integral.
Proof:
Known:

1, y = x is the elementary function, define the interval [0, + up) for continuous function, meet the function continuous condition.

2. a ≥ 3, b ≥ 3, c ≥ 3, a ∈ Jss, b ∈ Jss, c ∈ Jss, (a+b+c) ≥ 9, (a+b+c+1) ≥ 10,
(a+b+c+1) ∈ 2 (N^+≧5), Y = x function F (x) = 1/2 (a + b + c + 1) 2,
[function value (a + b + c + 1) 2) / 2 is of 50 or more constant. (limC = C);
By y = (a + b + c + 1), x = (a + b + c + 1) and y = x of a right triangle S_1 of the generalized integral,
The function y = x in [0, +∞) on the generalized integral.

$$S1 = \int_0^{+\infty} x\,dx = \lim_{(a+b+c+1)\to+\infty}\int_0^{(a+b+c+1)} x\,dx = \lim_{x\to+\infty} x^2/2 = \lim_{(a+b+c+1)\to+\infty} 1/2(a+b+c+1)^2 = 1/2(a+b+c+1)^2$$

$A = 2S_1$

$$A = 2\int_0^{+\infty} x\,dx = \lim_{(a+b+c+1)\to+\infty}\int_0^{(a+b+c+1)} 2x\,dx = \lim_{x\to+\infty}(x^2/2)*2 = \lim_{(a+b+c+1)\to+\infty} (a+b+c+1)^2$$

$= (a+b+c+1)^2$

Conclusion 2:
Within the I quadrant, the sum of any three odd prime number, plus 1, (a + b + c + 1) for the side length of square Area of A generalized integral value is infinite.

2.7 Within I quadrant to (a + b + c + 1) / 2 is the midpoint of a side length of the coordinatevalues.
Will A is divided into four
A small square, as shown in figure 4:

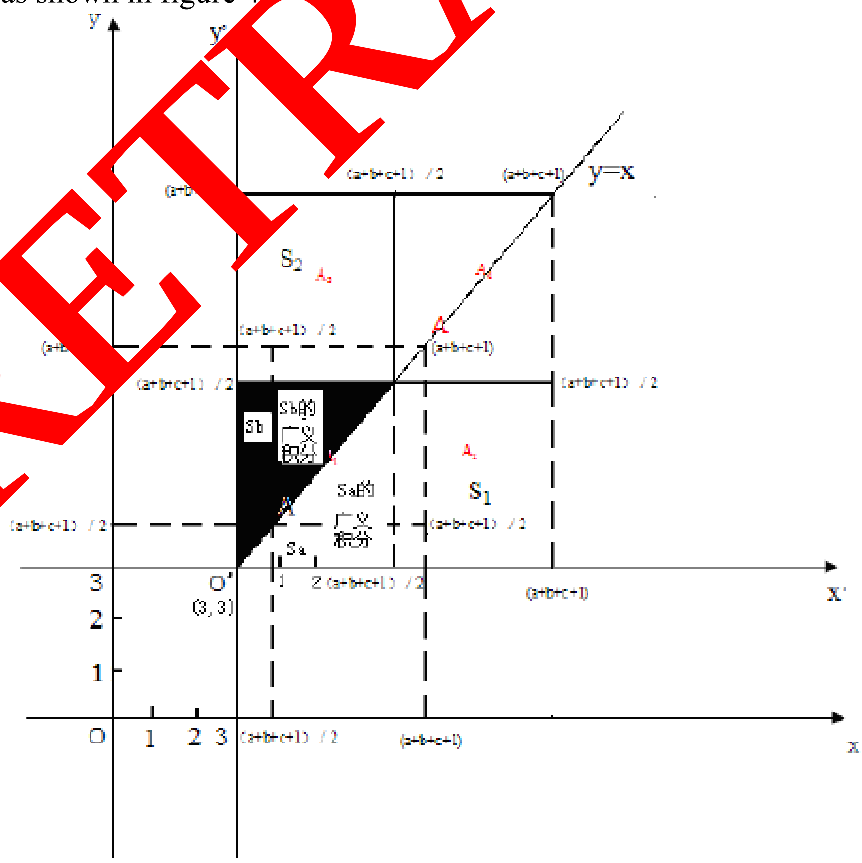

Figure - 4

Because of the $2\sqrt{A1}$ -1= (a + b + c) Meet the known conditions: $\sqrt{A_1}=(a+b+c+1)/2$,
$a \in Jss$, $b \in Jss$, $c \in Jss$ $a \geq 3$, $b \geq 3$, $c \geq 3$,
$(a + b + c) \geq 9$, $(a+b+c+1)/2 \geq 5$, $(a+b+c+1)/2 \in N^+ \geq 5$

(1) y = xIn $[0, +\infty)$ is integral and the Sa for an improper integral, there by A_1-1) (2) for the element of infinite sets, this infinite set of elements (a quarter of a square area A_1 generalized integral value of the square root of 2 x minus 1)
Elements within a "Js 9 or higher" one to one correspondence and be equal.

(2) $(2\sqrt{A_1}$ -1)$\in$ Js$\geq$9 Within the I quadrant($2\sqrt{A_1}$ -1)andJs$\geq$9 Infinite elements within a collection There is a one-to-one correspondence and equal relationship $2\sqrt{A_1}$ -1= (a+b+c) To prove ($2\sqrt{A_1}$-1)Is any odd number greater than or equal to 9 can be expressed as the sum of three odd prime Numbers (a + b + c). Therefore, Goldbach conjecture (b).

Conclusion Goldbach conjecture proposed since 1742, more mathematicians published almost primes, exceptions to the rule set, such as three prime number theorem proof methods, this paper gives the create double rectangular coordinate system, using any two (or three), the sum of a prime number (a + b)/(a + b + c) side to form a square with an area of a, or a quarter of a square area A1 "square" diagonal integral method, derive the equations
$2\sqrt{A_1}$ = (a+b); ($2\sqrt{A_1}$ -1) = (a+b+c);

This proved that the innovation of the Goldbach conjecture.

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REFERENCES:

[1] Jiang Lu, Zhao Dingbai, [illegible]ter, Zhang Wan yu, li and zhang, shen revival, Chen Fumin China children's encyclopedia of science technology (first edition), hangzhou: zhejiang education press, 1991, 145 Editorial committee of economic mathematics.

[2] The central radio and TV university. The economic applied mathematics (a) calculus (first edition) Beijing: the central radio and Television University press, 1986. 299 - 300.