Mathematics, I undressed the theory of numbers,
Wetzlar, Germany, pensioner, e-mail: michusid@mail.ru
Mykhaylo Khusid

Representation of even number in the form of the sum of four simple.

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Abstract: *Harald Andres Helfgott finally solved 2013 a weak problem of Goldbach.*

$$p_1 + p_2 + p_3 = 2N + 1 \qquad [1]$$

where at the left the sum of three prime numbers, on the right odd numbers, since 7

The author provides the proof in this work, being guided by the decision

weak problem of Goldbach that:

$$p_1 + p_2 + p_3 + p_4 = 2N \qquad [2]$$

where on the right sum of four prime numbers, at the left any even number,

since 12, by method of mathematical induction.

Keywords:

On this basis, solves two actual problems of the theory

numbers

Decision.

1. For the first even number 12 = 3+3+3+3.

We allow justice for the previous N> 5:

$$p_1 + p_2 + p_3 + p_4 = 2N \qquad [3]$$

We will add to both parts on 1

$$p_1 + p_2 + p_3 + p_4 + 1 = 2N + 1 \qquad [4]$$

where on the right the odd number also agrees [1]

$$p_1 + p_2 + p_3 + p_4 + 1 = p_5 + p_6 + p_7 \qquad [5]$$

Having added to both parts still on 1

$$p_1 + p_2 + p_3 + p_4 + 2 = p_5 + p_6 + p_7 + 1 \qquad [6]$$

We will unite $p_6 + p_7 + 1$

again we have some odd number,

which according to [1] we replace with the sum of three simple and as a result we receive:

$$p_1 + p_2 + p_3 + p_4 + 2 = p_5 + p_6 + p_7 + p_8 \qquad [7]$$

at the left the following even number is relative [3], and on the right the sum four prime numbers.

$$p_1 + p_2 + p_3 + p_4 = 2N \qquad [8]$$

Thus obvious performance of an inductive mathematical method.

As was to be shown.

2.Any even number starting with six is representable in the form of the sum of two prime numbers. Goldbach-Euler's hypothes.

As 2N can be any we set to it the first value

$$2N = 2p_2 + 2p_4 + 2 \qquad [9]$$

we substitute in [8] we matter:

$$p_1 + p_2 + p_3 + p_4 = 2p_2 + 2p_4 + 2 \qquad [10]$$

$$p_1 + p_2 + p_3 + p_4 - 2p_2 - 2p_4 = 2 \qquad [11]$$

$p_1 + p_3 = p_2 + p_4 + 2$ *[12]*

Having assumed that the even number is equally $p_2 + p_4$ *obvious that the following*
also sum of two simple. Method of mathematical induction.

3.Thus we proved:

Any even number since 6 is representable in the form of a bag of two odd

the simple.

$p_1 + p_2 = 2N$ *[13]*

Any even number is representable in the form of the sum of two simple. In total

even numbers, without exception, since 6 are the sum of two prime numbers.

Goldbakha-Euler's problem is true and proved!

4. On the basis above the proved we solve one more fundamental

task.

5. Any even number, since 14, is representable in the form of the sum of four

odd prime numbers, from which two twins.

$p_1 + p_2 + p_3 + p_4 = 2N$ *[14]*

Let $p_3, p_4.$ · *- prime numbers twins, then a difference of any even,*

since 14, and the sums of twins too even number which agrees,

the proved Goldbach-Euler's hypothesis it is equal to the sum of two simple.

Further we will arrange prime numbers from left to right in decreasing order.

6.And in case even number, $2N = 2p_2 + 2p_4 + 4$ then p_1, p_2.

inevitably also twins.

We will subtract [14] sum from both parts $2p_2 + 2p_4$:

$$p_1 - p_2 + p_3 - p_4 = 4 \qquad [15]$$

From [15], obviously, p_1, p_2. - inevitably twins.

7. Prime numbers of twins infinite set.

Let their final number and last prime numbers twins p_3, p_4.

We will designate two prime large numbers than p_3, p_4. as p_1, p_2. .

We will summarize all four prime numbers and then according to item punkt6

there is even number 2 N, at which inevitably big p_1, p_2. -

twins. And further substituting in the sum instead p_3, p_4. of numerical values

p_1, p_2. process becomes infinite.

Literature:

1. Wikipedia.