Unique relationship to find prime numbers

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Abstract:

A new theory in the field of number theory. For hundreds of years mathematicians could not reach a general formula for the prime numbers. But Now my discovery gives 4 general formulas produce all odd numbers except multiples of 3 and the prime numbers and therefore this new theory would solve the problem of the difficulty in reaching the prime numbers.

Contents:

Introduction

The prime number is a natural number greater than 1, is divisible by itself and the only one.

And a set of prime numbers is finished. Euclid has proved that in 300 BC.

Most Greeks did not consider the 1 as prime number, while in the nineteenth century, Some of mathematicians considered it as prime number. For example, the list formed by Derek Norman Émr of prime numbers smaller than 10006721, which is printed for the last time in 1956, started with number 1. In the nineteenth century, mathematicians had considered 1 as prime number, and since the definition of prime numbers was then is every number is divisible by only 1 and itself. 1 isn't considered as prime number. And It is said that the mathematician Henri Leon Obeg is the last mathematician was considered 1 as prime number.

The importance of prime numbers in number theory and in general in mathematics from the basic theorem in Algebra, which states that every positive integer greater than 1, can be written as product of the number 1 or a set of prime numbers. As a result, prime numbers can be considered as the basis of all numbers. For example:

$$23244 = 2 \times 2 \times 3 \times 13 \times 149 \qquad 532 = 2 \times 2 \times 7 \times 19$$

All prime numbers except -2, 5 - end with 1 ,3 ,7 or 9. It is noted that the First prime number result from the summation of 2 prime numbers is the number 5 = 2 + 3.

Relationship of prime numbers with the total angles of their closed polygonal

When you search for the relationship between prime numbers and the total angles of their closed polygonal we observe the following:

- Number 2 cannot be represented as a closed polygonal and in order to take it into consideration I will start with the First number that result from the summation of two prime numbers, 5 = 2 + 3.

- Total internal angles of closed polygonal equal to (n - 2) × 180 and by compensating with prime numbers starting with 5 we get:

540, 900.1620, 1980, 2700.3060, 3780.4860, ...

And then I divided this sequence into two equal parts as the first part takes numbers I, III and V ......, and so on:

540.1620, 2700, 3780, ...

The second part takes numbers, II, IV and VI, ... and so on:

900, 1980, 3060.4860, ...

- By observing the previous sequences the total angles of closed polygonal of prime numbers fall within:

$$540 + 1080\,y \qquad \text{or} \qquad 900 + 1080\,y$$

As the individual prime number except -2,5 - must start with 1, 3, 7.9, and as we add to the sum of angles 1080 at each time we get sum of angles if we reversed the rule to know the value of n, we will find they are as follows :

540 + (1080 × 1) = 1620 ÷ 180 = 9 +2 = 11

540 + (1080 × 2) = 2700 ÷ 180 = 15 +2 = 17

540 + (1080 × 3) = 3780 ÷ 180 = 21 +2 = 23

540 + (1080 × 4) = 4860 ÷ 180 = 27 +2 = 29

540 + (1080 × 5) = 5940 ÷ 180 = 33 +2 = 35

540 + (1080 × 6) = 7020 ÷ 180 = 29 +2 = 41

Thus, the prime number (X) =

$$x = \frac{540+(1080\,y)}{180} + 2 \qquad \text{or} \qquad x = \frac{900+(1080\,y)}{180} + 2$$

And here we find that any number (X) gives a fractionated in both previous two equations is not considered as a prime number.

- Simplification of the previous two equations we get:

The 1st equation: x = 6y + 5 The 2nd equation: x = 6y + 7

$Both\ equations\ give\ prime\ and\ non$ −prime numbers but there's a relationship between the outputs (which aren't prime) and the y values as the following:

13x+1
Because the resulting number is divisible by the 13

27
40
47
54
59
64
66
68
70
73
77
78
79
81
83
84
.....

11x+19
Because the resulting number is divisible by the 11

19
27
30
40
41
47
52
54
59
63
64
66
68
70
73
74
.....

7x,x>0
Because the resulting number is divisible by the 7

7
14
19
21
27
30
35
40
41
42
47
49
52
54
56
59
......

5x+3
Because the resulting number is divisible by the 5

3
7
8
13
14
18
19
21
23
27
28
30
33
35
38
40
41
42
43
47
48
49
52
53
54
56
58
59
......

Thus, the sequence continues, and hence, we conclude that if there were three numbers a, b, c < y and ab+ c = y, then:

$$X = 6(ab + c) + 7$$

$$X = (6ab) + (6c + 7)$$

$$if \quad \frac{6c + 7}{a} (from\ the\ 1st\ equation) = integer\ number\ so\ x\ isn't\ a\ prime\ number$$

$$\frac{6c + 5}{a} (from\ the\ second\ equation) = integer\ number\ so\ x\ isn't\ a\ prime\ number$$

An example : If we want compensation for the value of y was 642 , we note that :
(6 × 642) + 7 = 3859 = (6 × 17 × 37) (6 × 13 + 7) and as:

$$\frac{6c + 7}{a} = \frac{6 \times 13 + 7}{17} = 5\ (integer\ number)$$

$$So\ 3859\ isn't\ a\ prime\ number.$$

Now if we assume that the $\frac{6c+7}{a} = m$ so $c = \frac{ma-7}{2\times3}$.

M must be an odd number not divisible by a 3 as if it were an even, then m × a = even × odd = even number and this interferes with the outputs of the equation 6c +7 which are starting with 1,3,5,7,9 only. And it's not divisible by 3 because 6c +7 never generate a number divisible by 3, and thus as m is one of its factors primaries, it will not divisible by 3, and similarly a odd number not divisible by 3.

While B takes any value except zero.

And thus m, a, can be written as follows:

a = 3q + r1, m = 3q + r2 (two numbers not divisible by 3). And therefore:

Ma = (3q + r2) (3q + r1)

Ma = 9qp +3 (p r2 + q r1) + r1 r2

but r1 and r2 values must be: 1,2

$$Ma \begin{cases} 9qp+3(p+q)+1 \\ 9qp+3(pr_2+qr_1)+2 \begin{cases} 9qp+3(p+2q)+2 \\ 9qp+3(2p+q)+2 \end{cases} \\ 9qp+6(p+q)+4 \end{cases}$$

as I said before $a= 3q+r_1$ so if $r_1=1$ then q={2,4,6,8,10,…..} in order to make the result an odd number, and if $r_1=2$ then q={1,3,5,7,9,….} and the same reason for $m=3p+r_2$.

$c = \frac{ma-7}{2\times3}$ Thus, there are four possibilities for the product of the ma stating as follows :

The first possibility:

$$c = \frac{9qp + 3(p + q) + 1 - 7}{6} = \frac{9qp + 3(p + q) - 6}{6}$$

$$6y + 7 = 6(ab + c) + 7 = 6\left(ab + \frac{9qp + 3(p + q) - 6}{6}\right) + 7$$

$$6\left((3q + 1)b + \frac{9qp + 3(p + q) - 6}{6}\right) + 7 =$$

$$6(3q + 1)b + 9qp + 3(p + q) - 6 + 7 =$$

$$18qb + 6b + 9qp + 3(p + q) + 1 = x1$$

The second possibility:

$$c = \frac{9qp + 3(2p + 2q) + 4 - 7}{6} = \frac{9qp + 3(2p + 2q) - 3}{6}$$

$$6y + 7 = 6(ab + c) + 7 = 6\left(ab + \frac{9qp + 6(p + q) - 3}{6}\right) + 7$$

$$6\left((3q + 2)b + \frac{9qp + 6(p + q) - 3}{6}\right) + 7 =$$

$$6(3q + 2)b + 9qp + 6(p + q) - 3 + 7 =$$

$$18qb + 12b + 9qp + 6(p + q) + 4 = x2$$

The third possibility:

$$c = \frac{9qp + 3(p + 2q) + 2 - 7}{6} = \frac{9qp + 3(p + 2q) - 5}{6}$$

$$6y+7=6(\mathrm{ab}+\mathrm{c})+7=6\left(\mathrm{ab}+\frac{9\mathrm{qp}+3(\mathrm{p}+2\mathrm{q})-5}{6}\right)+7$$

$$6\left((3\mathrm{q}+1)\mathrm{b}+\frac{9\mathrm{qp}+3(\mathrm{p}+2\mathrm{q})-5}{6}\right)+7=$$

$$6(3\mathrm{q}+1)\mathrm{b}+9\mathrm{qp}+3(\mathrm{p}+2\mathrm{q})-5+7=$$

$$18\mathrm{qb}+6\mathrm{b}+9\mathrm{qp}+3(\mathrm{p}+2\mathrm{q})+2=x3$$

The fourth possibility:

$$c=\frac{9\mathrm{qp}+3(\mathrm{p}+2\mathrm{q})+2-7}{6}=\frac{9\mathrm{qp}+3(\mathrm{p}+2\mathrm{q})-5}{6}$$

$$6y+7=6(\mathrm{ab}+\mathrm{c})+7=6\left(\mathrm{ab}+\frac{9\mathrm{qp}+3(2\mathrm{p}+\mathrm{q})-5}{6}\right)+7$$

$$6\left((3\mathrm{q}+2)\mathrm{b}+\frac{9\mathrm{qp}+3(2\mathrm{p}+\mathrm{q})-5}{6}\right)+7=$$

$$6(3\mathrm{q}+2)\mathrm{b}+9\mathrm{qp}+3(2\mathrm{p}+\mathrm{q})-5+7=$$

$$18\mathrm{qb}+12\mathrm{b}+9\mathrm{qp}+3(2\mathrm{p}+\mathrm{q})+2=x4$$

In the second equation 6y 5 , we find that $c=\frac{\mathrm{ma}-5}{2\times 3}$ and therefore :

The first possibility:

$$c=\frac{9\mathrm{qp}+3(\mathrm{p}+\mathrm{q})+1-5}{6}=\frac{9\mathrm{qp}+3(\mathrm{p}+\mathrm{q})-4}{6}$$

$$6y+7=6(\mathrm{ab}+\mathrm{c})+7=6\left(\mathrm{ab}+\frac{9\mathrm{qp}+3(\mathrm{p}+\mathrm{q})-4}{6}\right)+5$$

$$6\left((3q+1)b+\frac{9qp+3(p+q)-4}{6}\right)+5=$$

$$6(3q+1)b+9qp+3(p+q)-4+5=$$

$$18qb+6b+9qp+3(p+q)+1=n1=x1$$

The second possibility:

$$c=\frac{9qp+3(2p+2q)+4-5}{6}=\frac{9qp+3(2p+2q)-1}{6}$$

$$6y+7=6(ab+c)+7=6\left(ab+\frac{9qp+6(p+q)-1}{6}\right)+5$$

$$6\left((3q+2)b+\frac{9qp+6(p+q)-1}{6}\right)+5=$$

$$6(3q+2)b+9qp+6(p+q)-1+5=$$

$$18qb+12b+9qp+6(p+q)+4=n2=x2$$

The third possibility:

$$c=\frac{9qp+3(p+2q)+2-5}{6}=\frac{9qp+3(p+2q)-3}{6}$$

$$6y+7=6(ab+c)+7=6\left(ab+\frac{9qp+3(p+2q)-3}{6}\right)+5$$

$$6\left((3q+1)b+\frac{9qp+3(p+2q)-3}{6}\right)+5=$$

$$6(3q+1)b+9qp+3(p+2q)-3+5=$$

$$18qb + 6b + 9qp + 3(p + 2q) + 2 = n3 = x3$$

The fourth possibility:

$$c = \frac{9qp + 3(2p + q) + 2 - 5}{6} = \frac{9qp + 3(2p + q) - 3}{6}$$

$$6y + 7 = 6(ab + c) + 7 = 6\left(ab + \frac{9qp + 3(2p + q) - 3}{6}\right) + 5$$

$$6\left((3q + 2)b + \frac{9qp + 3(2p + q) - 3}{6}\right) + 5 =$$

$$6(3q + 2)b + 9qp + 3(2p + q) - 3 + 5 =$$

$$18qb + 12b + 9qp + 3(2p + q) + 2 = n4 = x4$$

Thus, all the numbers that do not result from the previous 4 equations, which begins with 1,3,7 or 9 and not a multiple of number 3 are prime numbers because I described previously as the multiples of 3 is not produced by the equations 6y +7 and 6y +5 and therefore The four equations will not produce them too. There are only two cases where c = 0 in the $\frac{ma-7}{2\times3}$ and $\frac{ma-5}{2\times3}$ if a = 7,5 where previously it was clarified that if the compensation of multiples of five instead of y in the first equation, the output is divisible by 5 and if the compensation of multiples of 7 in the second equation, the output is divisible by 7.

The relationship between the four unknowns p, q, b, n where n represents all the numbers that result from the previous four equations , and all them aren't prime as follows:

First equation

$$n_1 = 18qb + 6b + 9qp + 3(p + q) + 1$$

$$q = \frac{n_1 - 3p - 6b - 1}{9p + 18b + 3}$$

$$p = -\frac{18bq + 3q + 6b - n_1 + 1}{9q + 3}$$

$$b = -\frac{9pq + 3p + 3q - n_1 + 1}{18q + 6}$$

b≠0

c=0 if a=7

q € {2,4,6,8,10,…….}, p € {0,2,4,6,8,10,…..}

Second equation

$$n_2 = 18qb + 12b + 9qp + 6(p + q) + 4$$

$$q = -\frac{6p + 12b - n_2 + 4}{9p + 18b + 6}$$

$$p = -\frac{18bq + 6q + 12b - n_2 + 4}{9q + 6}$$

$$b = -\frac{9pq + 6p + 6q - n_2 + 4}{18q + 12}$$

b≠0

c=0 if a=5

q € {1,3,5,7,9,…….}, p € {1,3,5,7,9,…..}

Third equation

$$n_3 = 18qb + 6b + 9qp + 3(p + 2q) + 2$$

$$q = \frac{n_3 - 3p - 6b - 2}{9p + 18b + 6}$$

$$p = \frac{-18bq + n_3 - 6b - 6q - 2}{9q + 3}$$

$$b = \frac{-9pq + n_3 - 3p - 6q - 2}{18q + 6}$$

b≠0

c=0 if a=7

q € {2,4,6,8,10,…….}, p € {1,3,5,7,9,…..}

Fourth equation

$$n_4 = 18qb + 12b + 9qp + 3(2p + q) + 2$$

$$q = \frac{n_4 - 6p - 12b - 2}{9p + 18b + 3}$$

$$p = \frac{-18bq + n_4 - 3q - 12b - 2}{9q + 6}$$

$$b = \frac{-9pq + n_4 - 3q - 6p - 2}{18q + 12}$$

b≠0

c=0 if a=5

q € {1,3,5,7,9,…….}, p € {0,2,4,6,8,10,…..}

Summary: the previous 4 equations generate all odd numbers except the multiples of 3 and the prime numbers.

The End