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DISTRIBUTION THEOREM OF PRIME NUMBERS

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ABSTRACT

It is the method of finding equation of a prime numbers on the basis of mathematical equations. Through this equation we can predict their distribution and relation to prime numbers.
$\Pi_n = 2\,\Pi_{n-1} - \Pi_{n-2} \pm 2$
Where Π_n, Π_{n-1} *and* Π_{n-2} *are prime numbers.*

INTRODUCTION

We know prime numbers are the distribution of one degree polynomials. Distribution of one degree polynomials derived as [1]

$$Y_3 = 2Y_2 - Y_1 \quad (1)$$

Where Y_3, Y_2 and Y_1 are real numbers (R). Through this equation we can predict next prime number and their distribution greater than 7.

DISTRIBUTION THEOREM OF PRIME NUMBERS USING NUMERICAL METHODS

Let
X: $x_1, x_2, x_3, x_4, x_5, \ldots$
Y: $y_1, y_2, y_3, y_4, y_5, \ldots$
$y_1, y_2, y_3, \ldots y_n$ be the corresponding x_i values of n degree polynomial. So we can find Y_n value by without finding the polynomial. In this case x_i should be equally spaced [1].

General equation for n degree polynomial

$$Y_{q+2} = \frac{(n+1)}{1!}\, y_{q+1} - \frac{n(n+1)}{2!}\, y_q + \frac{n(n+1)(n-1)}{3!}\, y_{q-1} - \frac{n(n+1)(n-1)(n-2)}{3!}\, y_{q-2} + \ldots \quad (2)$$

Where n = degree of the polynomial

we know 1,2,3,5,7,11,13,17,19,23,29,31,37,... are prime numbers. We can simply say distribution of prime number is
$\Pi_n = 2n - 1$

Where n = natural numbers. We can predict the prime numbers
i.e.
$2 = 2 \times 1 - 0$
$3 = 2 \times 2 - 1$
$5 = 2 \times 3 - 1$ etc.

But in the case of
$2 \times 5 - 1 = 9$
$2 \times 11 - 1 = 21$ etc are not a prime number. So we need to find the exact distribution of prime numbers. From equation (2)
$\Pi_n = 2\,\Pi_{n-1} - \Pi_{n-2} \pm 2$

Where Π_n, Π_{n-1} and Π_{n-2} are prime numbers. it's valid only they are greater than 7.

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i.e; 11 = 2 x 7 – 5 + 2
13 = 2 x 11 – 7 – 2
17 = 2 x 13 – 11 + 2
53 = 2 x 47 – 43 + 2 etc.

REFERENCES

1. Dileep S., 2015, www.ijma.info ISSN 2229 – 5046.

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