Distribution image of prime numbers in natural numbers

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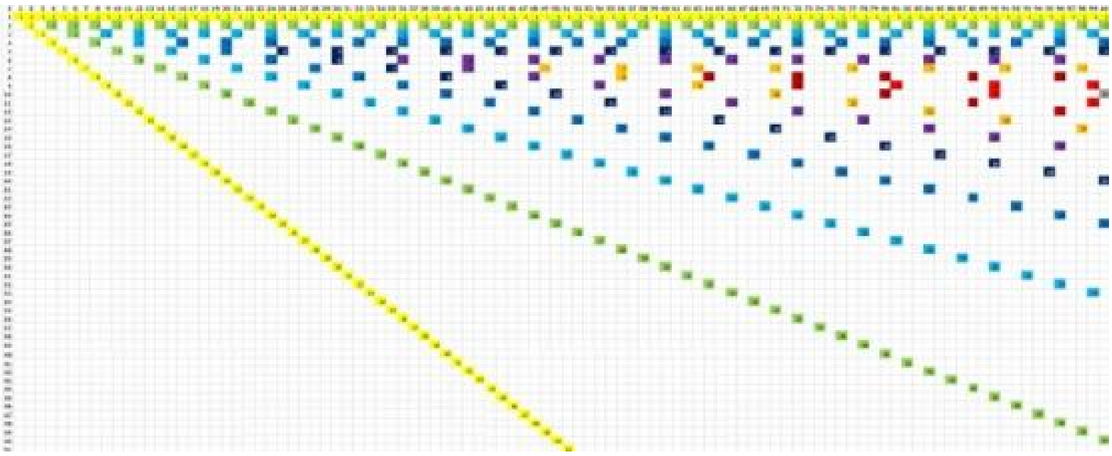
Abstract: In this paper, the method of how to draw the image of the distribution of prime numbers in natural numbers is given.

Key words: Image of prime distribution, prime, natural number.

Find out the method of prime number distribution. 1. Draw a plane coordinate system and write numbers on the number axis. 2. Arbitrarily select a coordinate axis and draw parallel lines parallel to another coordinate axis based on the points with numbers on this coordinate axis. 3. Draw infinite points on the parallel lines based on the points on this coordinate axis and the values of the numbers on this coordinate axis as intervals on each parallel line. 4, Erase the slash with an angle of 45 ° with the coordinate axis. 5. On another coordinate axis, you will find the number on this coordinate axis. If there is no corresponding point, then the number is prime. If there is a corresponding point, then the number marked by these corresponding points is its divisor. 6. If you want to find all the divisors of this number, you have to redraw the 45 ° slash that has been erased.

Finally, the prime distribution you draw should be similar to the following picture, but the color mark in this picture is another way to express it. I won't say it here. If you are interested, you can study it yourself.



In addition, this picture can give us a message,

1， S is a positive integer, p_k is primes, $n_k \to \infty$, $\Rightarrow \prod_{k=1}^{\infty}({p_k}^{+s*n_k}) = \prod_{k=1}^{\infty}[\frac{({p_k}^{+s*(n_k+1)}-1)}{({p_k}^{+s}-1)} / \frac{({p_k}^{-s*(n_k+1)}-1)}{({p_k}^{-s}-1)}] = \frac{\sum_{m=1}^{\infty}(m^{+s})}{\sum_{m=1}^{\infty}(m^{-s})}$.

So, now let me say, why is it like this?

First, we know that any natural number can be expressed as the product of prime numbers, which is similar to this form, that is, $m = \prod_{k=1}^{h}({p_k}^{n_k})$. Then, if the arrangement order is ignored, that is, any natural number corresponds to the arrangement and combination of the product of a prime number. So, that is to say, if the arrangement order is ignored, all the permutations and combinations of prime numbers correspond to all natural numbers one by one.

So, we know $\prod_{k=1}^{\infty}\frac{(p_k{}^{+s*(n_k+1)}-1)}{(p_k{}^{+s}-1)} = \prod_{k=1}^{\infty}(p_k{}^{+s*(0)} + p_k{}^{+s*(1)} + p_k{}^{+s*(2)} + p_k{}^{+s*(3)} + p_k{}^{+s*(4)} + p_k{}^{+s*(5)} + p_k{}^{+s*(6)} + \cdots)$.

Then we find that this product is completely disassembled into the form of addition, which just ignores the arrangement order and adds any arrangement and combination of all primes.

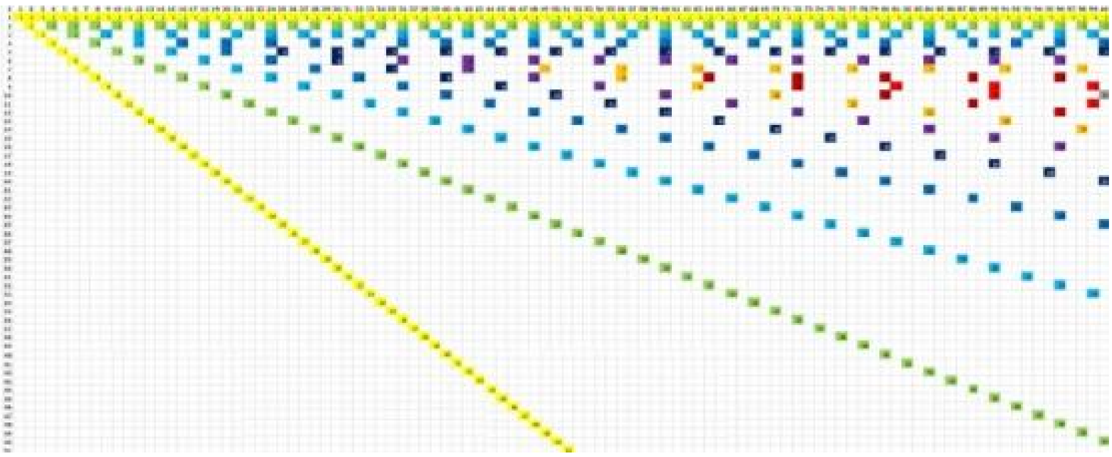
So, there's $\prod_{k=1}^{\infty}\frac{(p_k{}^{+s*(n_k+1)}-1)}{(p_k{}^{+s}-1)} = \sum_{m=1}^{\infty}(m^{+s})$, $\prod_{k=1}^{\infty}\frac{(p_k{}^{-s*(n_k+1)}-1)}{(p_k{}^{-s}-1)} = \sum_{m=1}^{\infty}(m^{-s})$.

Then we know that any natural number is equal to the sum of all its divisors divided by the sum of the reciprocal of all its divisors. So, there is,

S is a positive integer, p_k is primes, $n_k \to \infty$, $\Rightarrow \prod_{k=1}^{\infty}(p_k{}^{+s*n_k}) = \prod_{k=1}^{\infty}[\frac{(p_k{}^{+s*(n_k+1)}-1)}{(p_k{}^{+s}-1)} / \frac{(p_k{}^{-s*(n_k+1)}-1)}{(p_k{}^{-s}-1)}] = \frac{\sum_{m=1}^{\infty}(m^{+s})}{\sum_{m=1}^{\infty}(m^{-s})}$.

Then, we find that if we ignore the order of arrangement, if we write any natural number, all its divisors have a unique way of writing.

Then, if we arrange the common divisors of all natural numbers in one line and arrange all natural numbers in natural order, then we find that there will be such a picture. That is, the distribution image of prime numbers in natural numbers.



Reference: none.

素数在自然数中的分布图像

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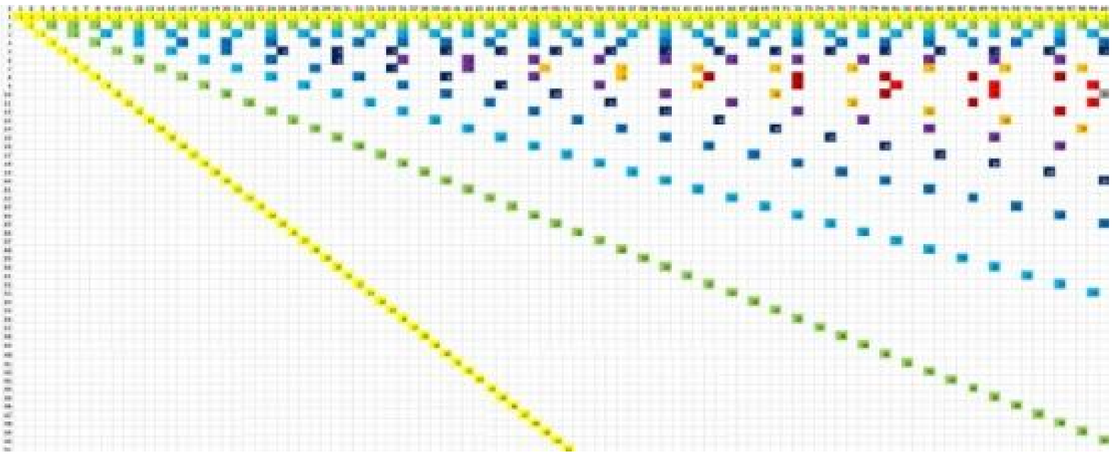
摘要：在本篇文章中给出了如何画出素数在自然数中的分布的图像的方法。

关键词：素数分布的图像，素数，自然数。

找出素数分布的方法，1，画出平面坐标系，数轴上写上数字，2，任意选择一个坐标轴，以这个坐标轴上写上数字的点为基础，画出平行于另一个坐标轴的平行线，3，在每个平行线上以这个坐标轴上的点为基础，以这个坐标轴上的数字的数值作为间隔，在平行线上画出无限个点，4，擦掉和坐标轴夹角为 45° 的斜线，5，在另一个坐标轴上，你会发现这个坐标轴上的数字，如果没有对应点，那么这个数字就是素数，如果有对应点，那么，这些对应点标记的数字，就是它的约数，6，如果你想找的这个数字的全部约数，那你就得把曾经擦掉的 45° 的斜线重新画出来。

最后你画出来的素数分布应该类似于下面这张图片，但是这张图中的颜色标记又是另外一种表示方式了，这里就不另外说了。如果你有兴趣的话，可以自己研究一下。



另外，这张图可以给我们一个信息，

1，S 表示正整数，p_k表示素数，$n_k \to \infty$ ， $\Rightarrow \prod_{k=1}^{\infty}(p_k{}^{+s*n_k}) = \prod_{k=1}^{\infty}[\frac{(p_k{}^{+s*(n_k+1)}-1)}{(p_k{}^{+s}-1)} / \frac{(p_k{}^{-s*(n_k+1)}-1)}{(p_k{}^{-s}-1)}] = \frac{\sum_{m=1}^{\infty}(m^{+s})}{\sum_{m=1}^{\infty}(m^{-s})}$。

那么，现在我说一下，为什么是这个样子？

首先，我们知道任意自然数都可以表示为素数的乘积的形式，类似于这种形式，即，$m = \prod_{k=1}^{h}(p_k{}^{n_k})$。 那么，如果忽略排列顺序，也就是说，任意自然数都对应着一个素数的乘积的排列组合。那么，也就是说，如果忽略排列顺序，所有素数排列组合，是和所有自然数一一对应的。

那么，我们知道$\prod_{k=1}^{\infty}\frac{(p_k{}^{+s*(n_k+1)}-1)}{(p_k{}^{+s}-1)}=\prod_{k=1}^{\infty}(p_k{}^{+s*(0)}+p_k{}^{+s*(1)}+p_k{}^{+s*(2)}+p_k{}^{+s*(3)}+p_k{}^{+s*(4)}+p_k{}^{+s*(5)}+p_k{}^{+s*(6)}+\cdots)$，

然后我们发现，这个乘积完全拆开成为加法的形式，正好是忽略排列顺序，任意所有素数排列组合相加，

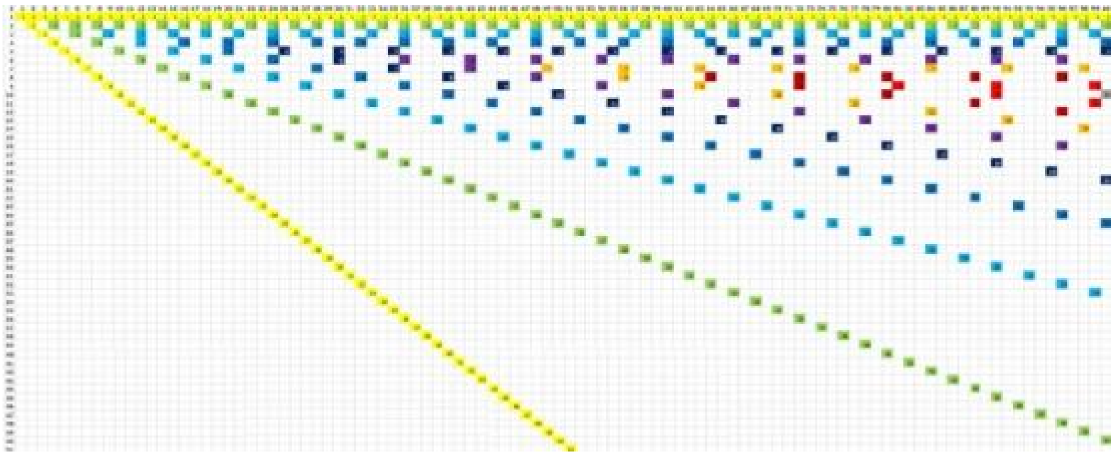
那么，就有，$\prod_{k=1}^{\infty}\frac{(p_k{}^{+s*(n_k+1)}-1)}{(p_k{}^{+s}-1)}=\sum_{m=1}^{\infty}(m^{+s})$，$\prod_{k=1}^{\infty}\frac{(p_k{}^{-s*(n_k+1)}-1)}{(p_k{}^{-s}-1)}=\sum_{m=1}^{\infty}(m^{-s})$。

然后，我们又知道，任意自然数，等于它的所有的约数的和，除以，它的所有的约数的倒数的和。那么，就有，

s 表示正整数，p_k表示素数，$n_k\rightarrow\infty$，$\Rightarrow\prod_{k=1}^{\infty}(p_k{}^{+s*n_k})=\prod_{k=1}^{\infty}[\frac{(p_k{}^{+s*(n_k+1)}-1)}{(p_k{}^{+s}-1)}/\frac{(p_k{}^{-s*(n_k+1)}-1)}{(p_k{}^{-s}-1)}]=\frac{\sum_{m=1}^{\infty}(m^{+s})}{\sum_{m=1}^{\infty}(m^{-s})}$。

然后，我们发现，如果忽略排列顺序，如果写出来任意自然数，它的所有的约数，都有唯一一种写法。

那么，如果我们按照把所有自然数的共同约数排在一行，并且把所有自然数按自然顺序排列，然后我们发现，就会有这样一张图。即，素数在自然数中的分布图像。



参考文献：无。