Generation Of The Entire Elements Of A Field Given Three Elements Of It

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Abstract

In this research investigation, the author has presented a '*Scheme to Generate The Entire Elements Of A Field Given Three Elements Of It*'.

Theory

Universal Sequence Of Primes Of 2nd Order Space {2, 3, 5, 7, 11, 13,…………}

Firstly, we consider a Set containing two known consecutive Primes starting from the beginning, namely, 2 and 3.

$S_1 = \{2, 3\}$

We now consider the Set formed by considering the ascending order arrangement of the elements of $S_1 = \{2, 3\}$

$S_{1A} = \{2, 3\}$

We now consider $S_{1A} = \{2, 3\}$ and implement the following Scheme

$\{2, 3\}$ which can be written as

$\{x, x+1\}$ we now normalize this set in the following fashion

$\left\{x, x+\frac{1}{x}\right\}$ which we re-write as

$\{x^2, x^2+1\}$ where, we have omitted the denominator.

We now substitute the value of $x = 2$ and get

$S_{1A\ POSSIBLE\ PRIMES\ MAP} = \{4, 5\}$

Since, the first element is a Squared number as can be observed, we can note that the second element of $S_{1A\ POSSIBLE\ PRIMES\ MAP} = \{4, 5\}$ is Prime.

We now re-write the Primes Set in ascending order as $S_2 = \{2, 3, 5\}$

We again consider all Two Element Sets of $S_2 = \{2, 3, 5\}$ and arrange the elements in them in ascending order.

These are

$S_{2A1} = \{2, 3\}$
$S_{2A2} = \{3, 5\}$
$S_{2A3} = \{2, 5\}$

When we implement the above Scheme in the box, we get

$S_{2A1} = \{2, 3\}$ *gives* Prime 5
$S_{2A2} = \{3, 5\}$ *gives* Prime 11
$S_{2A3} = \{2, 5\}$ *gives* Prime 7

We now re-write the Primes Set as $S_3 = \{2, 3, 5, 7, 11\}$

We again consider all Two Element Sets of $S_3 = \{2, 3, 5, 7, 11\}$ and arrange the elements in them in ascending order.

When we implement the above Scheme in the box on these sets, we get some more Primes.

We keep repeating this procedure till we find all the Primes up to a Desired Limit.

Note: We can also consider this whole investigation considering the Descending Order case, but this gives Primes only occasionally*.

(* For more on this, see author)

Universal Sequence Of Primes Of Any Integral Order Space

Definition

A *Number* is considered as a *Prime Number* in a *Certain Higher Order Space*, say R is Only factorizable into a Product of (R-1) factors {of (R-1) *Distinct Non-Reducible Numbers* (*Primes*)}.

Example: The general Primes that we usually refer to are Primes of 2nd Order Space.

Generating Universal Sequence Of Primes Of Any Integral Order Space, (Say Rth Order Space)

Firstly, we generate all the elements of Universal Sequence Of Primes of 2nd Order Space (Our Standard Primes, 2, 3, 5, 7, 11,.....) upto a desired limit using the Scheme detailed already.

We now consider this Set $USP2 = \{2, 3, 5, 7, 11, ... p_{USP2}\}$ and form another set $USP2_2 = \{(2,3),(2,5),(2,7),(2,11),(3,5),(3,7),(3,11),(5,7),(5,11),(7,11),..............................\}$ which is gotten by considering all possible Two Element Sets Of $USP2$.

We now form another Set $USP3 = \{2 \cdot 3, 2 \cdot 5, 2 \cdot 7, 2 \cdot 11, 3 \cdot 5, 3 \cdot 7, 3 \cdot 11, 5 \cdot 7, 5 \cdot 11, 7 \cdot 11, ...\}$ wherein we consider the product of the two elements of each set of the set $USP2_2$. This is Set of *Universal Sequence Of Primes Of Third Order Space.*

For finding the Universal Sequence Of Prime of Any Integral Order Space, say Rth Order Space, using $USP2$, we now form another Set $USP2_R$ which is gotten by considering all possible R Element Sets Of $USP2$.

We now form another Set $USPR$ wherein we consider the product of the R elements of each set of the set $USP2_R$. This is Set of *Universal Sequence Of Primes Of* Rth *Order Space.*

In this manner, we can generate all the elements of Universal Sequence Of Primes of Any Integral Order Space up to a desired limit.

Example:

First Few Elements Of Sequence's Of {*Multi Distinct Dimensional Primes*} Primes	**Of R^{th}Order Space**
{2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, …}	R=2
{6 (3x2), 10 (5x2), 14 (7x2), 15 (5x3), 21 (7x3), 22 (11x2), 26 (13x2), 33 (11x3), 34 (17x2), 35 (7x5), 38 (19x2), 39, (13x3), 45 (9x5), ... }	R=3
{30 (5x3x2), 42 (7x3x2), 70 (7x5x2), 84 (7x4x3), 102 (17x3x2), 105 (17x3x2), 110 (11x5x2), 114 (19x3x2), 130 (13x5x2), ...}	R=4
210 (7x5x3x2), 275 (11x5x3x2), 482 (11x7x3x2), 770 (11x7x5x2), 1155 (11x7x5x3), …	R=5
…	…

Relative Prime Metric

The author calls this above method of finding the third number given any two numbers as the method of Relative Prime Metric Of 2^{nd} Order.

Generating An Entire Field (of Sequence of Numbers) Given Any Two Numbers

Using this Scheme, one can find an entire Universe (of Sequence of Numbers) given any two numbers. The Universe (of Sequence of Numbers) generated conforms to Relative Prime Metric.

Given randomly, any two numbers, say $\{a, b\}$, we can find out the entire Universe of Numbers using the above Scheme, wherein we write $\{a, b\}$ as

We now consider $R_{1A} = \{a, b\}$ and implement the following Scheme

$\{a, b\}$ which can be written as

$\{a, a + (b - a)\}$ we now normalize this set in the following fashion

$\left\{a, a + \frac{(b - a)}{a}\right\}$ which we re-write as

$\{a^2, a^2 + (b - a)\}$ where, we have omitted the denominator.

For Example, for the Set $R_{1A} = \{a, b\} = \{12, 31\}$

We now substitute the value of $a = 12$ and $b = 31$ get

$S_{1A\ POSSIBLE\ GENERATED\ ELEMENTS\ MAP} = \{144, 163\}$

We can note that the second element of $S_{1A\ POSSIBLE\ GENERATED\ ELEMENTS\ MAP} = \{144, 163\}$ is the Generated Element.

Furthermore, one can also modify the Scheme of Field Generation using $\left\{a, a + \frac{(b - a)}{a^f}\right\}$ instead of just $\left\{a, a + \frac{(b - a)}{a}\right\}$ where f can be considered as any Field of the Real, the Complex, the Integer, the Irrational, etc. Also, f can be some Function as well. The Field (of Numbers) Generated by f upon employing our Scheme is the Generated Field.

Example: Generating The Universal Sequence Of Primes Of N^{th} Order

To find the Universal Sequence Of Primes Of Any Integral Order Space, (say N^{th} Order Space) we simply consider modification to the Scheme to employ method of Relative Prime Metric Of N^{th} Order is simply changing $\left\{a, a + \frac{(b - a)}{a}\right\}$

to $\left\{a, a + \frac{(b-a)}{a^{N-1}}\right\}$. That is, the Standard Sequence of Primes found using this Scheme are Second Order Space Sequence Of Primes, where $\{a, b\}$ are the first two terms of the respective N[th] Order Sequence of Primes which can be arrived at by reasoning mathematically.

Relative Metric

From the above, one can infer that Relative Metric Generator for the two terms $\{a, b\}$ can be given by $\left\{a, a + \frac{(b-a)}{a^{f}}\right\}$ with respect to the above Scheme, where f can be considered as any Field of the Real, the Complex, the Integer, the Irrational, etc. Also, f can be some Function as well. The Field (of Numbers) Generated by f upon employing our Scheme is the Generated Field.

Example: **The Field Of Prime Numbers**

We have already seen that taking $f = 2 - 1 = 1$ gives us the Field of 2[nd] Order Space Universal Sequence of Primes, i.e., {2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, …}

Also, one should note that All Natural Phenomenona manifest themselves in Conformation to Metric such as $\left\{a, a + \frac{(b-a)}{a^{f}}\right\}$. That is, this is their *Quantization Scheme*, only that different Phenomena have different f.

Example: **The Universal Field: Theory Of Every Thing**

Let us say, we have evaluated the f's for the Electric Field, the Magnetic Field, the Nuclear Field, the Gravity Field, etc., (considering r different types of Fields) and they are given by

$$f_1, f_2, f_3, f_4, \ldots\ldots\ldots\ldots\ldots\ldots f_{(r-1)}, f_r$$.

We can then find the LCM (Lowest Common Multiple of all these f's), say it is $f_{LCM\ of\ (i=1\ to\ r)}$.

We now Create a Relative Metric in the fashion

$$x = \frac{1}{x^{f_{LCM\ of\ (i=1\ to\ r)}}}$$

which can explain (upon employing the afore-stated Scheme) all the Fields Simultaneously.

Note:

f_i can be any Field of the Real, the Complex, the Integer, the Irrational, etc. Also, f_i can be some Function as well.

Scheme to Generate The Entire Elements Of A Field Given Three Elements Of It

Say, only any three elements of a Field characterized by the Field Generator Metric of the type $\left\{a,\ a = \frac{(b-a)}{a^f}\right\}$

are given, them being $\left(a_i, a_j, a_k\right)$, we find f from the equation $a_k \cdot a_i^{f+1} = (a_j - a_i)$ employing the aforementioned scheme using the Field Generating Metric of the type $\left\{ a_i, a_i + \frac{(a_j - a_i)}{a_i^{\,f}} \right\}$. Once, we find f, we find the Intermediate elements a_r between any two elements a_p and a_p using the relation $a_q = a_p^{f} + \left(a_r - a_p\right)$ where $a_p < a_r < a_q$. Once, we find this element a_r, using all possible combinations among the 4 elements present now, and using the relation of the type $a_q = a_p^{f} + \left(a_r - a_p\right)$, we find more and more intermediate elements. In this fashion, we find all the Intermediate Elements between any given three elements of the Field using all possible pair combinations of the known elements. Needless to mention, we can always generate elements of a Field on the Higher Side, given any two Elements of it, using the scheme detailed in the previous sections.

Moral

The Fear Of Your Lord Is The Beginning Of Wisdom.

References

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Dedication

*All of the aforementioned Research Works, inclusive of this One are **Dedicated to Lord Shiva**.*