Principles of math (DNA) philosophy

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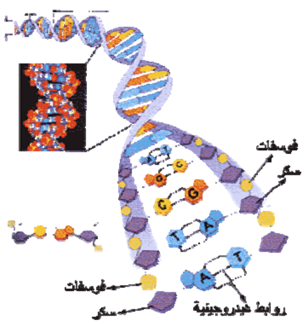


Summary:
The biological (DNA) is composed from four nitrogenic bases which are A, T, C and G as shown on the shape, they bond to each other by various sequences and repetitions to form various types of (DNA) tape and in various lengths.
Every single tape from (DNA) biological tapes is connected to it's complementary counterpart, but the complementary tape is holding the same bases that existed in the original (DNA) tape in opposite sequence. By examining the (DNA) double tape, we can figure out the genetic characteristics of the living cell. Accordingly, I managed to form arithmetical mechanism which so far takes after (DNA) biological mechanism, metaphorically, and this mechanism is working on arithmetical functions.

Introduction:
(DNA) arithmetical method is depending on a group of equations that enables us to convert functions into tow series; these series are completing each other. The tow series are representing the arithmetical code of the original function from which the tow series were derived.
The tow series are complementing each other, because one of them represents the function when values of independent variable approaches to infinity and the other series represents the function when values of independent variable approaches zero. This is the key philosophy of math (DNA) geometry and by examining the tow series, we can get to the original law of the function, so from here came the name of math (DNA) versus the name, biological (DNA).

Example
Suppose the function law is as follows:

$$y = (3\,x^{(23/10)} + x)^{(2/5)}$$

The tow series which representing the math (DNA) for the above functions are:

$$YI = 3^{(2/5)}\, x^{(23/25)} + \frac{2\, 3^{(2/5)}}{15\, x^{(19/50)}} - \frac{3^{(2/5)}}{75\, x^{(42/25)}}$$

$$YZ = x^{(2/5)} + \frac{6}{5} x^{(17/10)} - \frac{27}{25} x^{3} + \frac{216}{125} x^{(43/10)}$$

2- General shape of the proposed system:

2-1- Equations of the math (DNA) system (3)

The following equations are the base of math (DNA) arithmetical system to obtain series as follow:

$$K = \log(Y)/\log(X) = \ln(Y)/\ln(X) \text{......... .....}(1)$$

$$L = \lim_{x\to\infty}(K) \text{......... ....}\ (2)$$

$$P = K - L \text{.......... ....}(3)$$

$$R = X^{P} \text{.......... ....}(4)$$

$$T = \lim_{x\to\infty}(R) \text{......... ....}(5)$$

$$Y_{new} = Y_{old} - TX^{L} \text{.......... ....}(6)$$

$$YI = \sum TX^{L} \text{.......... ....}(7)$$

And as a final outcome for the above six equations is equation (7)

And by using the above seven equations again, but when X approaches to zero, so equation (2) and (5) would be written as follow

$$L = \lim_{x\to 0}(K) \text{......... ....}\ (2)$$

$$T = \lim_{x\to 0}(R) \text{......... ....}(\ 5)$$

And the sum of equations from (1) to (6) is equation (8) as follows

$$YZ = \sum TX^{L} \text{.....................}(8)$$

The tow series YI and YZ are the math DNA of the function Y , so the tow functions are considered the arithmetical code of function Y

Notice:

YI represents the function Y when X approaches to infinity and YZ represents function Y when X approaches to zero.

2-2 theories in the math DNA geometry

In this topic we will put the theories that enable us to examine the tow series YI and YZ that represents math DNA.

Theory (1)

In polynomial functions the tow series of math DNA, YI and YZ, are equal to each other and also equal to the original formula of the function as follow: If we have the following function, Y= f(X), where Y is polynomial series, so the tow series of arithmetical DNA are as follow:

Y=YI=YZ

Result:

If the exponents of any part of the tow series of arithmetical DNA are even, so this part is a polynomial function and will be a part from the original formula of the function.

Example

Let the function f be as follow

$$f = \sqrt{x^2+3} - x^3 + 7x^2 - x + 9$$

So the mathDNA will be

$$YI = -x^3 + 7x^2 + 9 + \frac{3}{2x} - \frac{9}{8x^3} + \frac{27}{16x^5} - \frac{405}{128x^7} + \frac{1701}{256x^9} - \frac{15309}{1024x^{11}}$$

$$YZ = \sqrt{3} + 9 - x + \left(7 + \frac{1}{6}\sqrt{3}\right)x^2 - x^3 - \frac{1}{72}\sqrt{3}x^4 + \frac{1}{432}\sqrt{3}x^6 - \frac{5}{10368}\sqrt{3}x^8 + \frac{7}{62208}\sqrt{3}x^{10} - \frac{7}{248832}\sqrt{3}x^{12}$$

We notice that the following terms in the tow series are equal

$$-x^3, 7x^2, 9$$

So we can write the formula for the function f as follow

$$f(x) = j(x) - x^3 + 7x^2 + 9$$

Where j is algebraic function in X

3- Examining the math DNA:

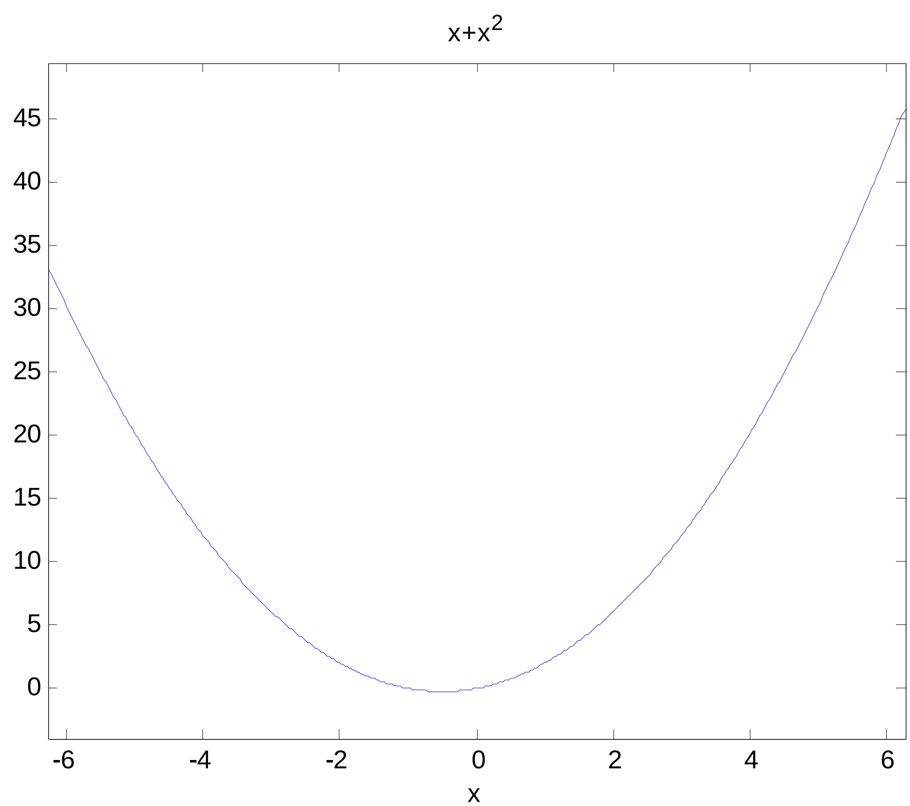
Suppose we have the functions values and the original formula of function is unknown. by using math DNA equations ,we can have tow series ,then converting these tow series into the original function formula but we should realize that the values we are working on must be approaching from infinity and zero.

Let's point the tow series which represent math DNA of the function Y as YI and YZ.
Let J is a function, if J(Y) so the tow series representing math DNA of the new function J(Y) are JZ and JI. If these tow series are equal so the original formula of the function Y is

$$Y = J^{-1}(JI) = J^{-1}(JZ)$$

4-Functions in the zero and infinity :
Each Function has its own domain when the values of independent values approach infinity and zero, in another words there is a special domain when the values of independent variables approach infinity and a special domain when the values of independent variables approach zero.

Example
Suppose the function is
$f(x) = x + x^2$
And the graph for that function is



If we have the above graph with several points known to us and we know that the function is polynomial, then we can find the original formula of the function by using several points where X is approximating from zero and from infinity as follow

x	y	k=log(y)/log(x)	l=limt(k)	t=x^(k-l)	T=limit(t)	y0=y-Tx^l	k=log(y0)/log(x)	l=limt(k)	t=x^(k-l)	T=limit(t)	y1=y0-Tx^l
1.00E-02	1.01E-02	9.98E-01	1.00E+00	1.01E+00	1	1.00E-04	2.00E+00	2	1.00E+00	1	0
1.00E-03	1.00E-03	1.00E+00	1.00E+00	1.00E+00	1	1.00E-06	2.00E+00	2	1.00E+00	1	0
1.00E-04	1.00E-04	1.00E+00	1	1.00E+00	1	1.00E-08	2.00E+00	2	1.00E+00	1	0

The above table represent points where X is approximating from zero and by applying the mathDNA equations mentioned in paragraph 2 we can reach to the series YZ which is equal to f(X)

x	y	k=log(y)/log(x)	l=limt(k)	t=x^(k-l)	T=limit(t)	y0=y-Tx^l	k=log(y0)/log(x)	l=limt(k)	t=x^(k-l)	T=limit(t)	y1=y0-Tx^l
1.00E+02	1.01E+04	2.00E+00	2	1.01E+00	1	1.00E+02	1.00E+00	1	1.00E+00	1	0
1.00E+03	1.00E+06	2.00E+00	2	1.00E+00	1	1.00E+03	1.00E+00	1	1.00E+00	1	0
1.00E+04	1.00E+08	2.00E+00	2	1.00E+00	1	1.00E+04	1.00E+00	1	1.00E+00	1	0

The above table represents points where X is approximating from infinity and by applying the math DNA equations mentioned in paragraph 2 we can reach to the series YI which is equal to f(X)

Explanation:

notice that the points of which X approaches to zero has enables us to get the original formula of the function f(X) ,from other hand, the points in which X approaches to infinity has enabled us to get to the original formula of the function f(X). Although we deal with a function drown as a curve,

We shouldn't consider the points that X is in between infinity and zero

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5- MATLAB program

For the seek of simplicity we can use this program to reach to the mathDNA YI and YZ of the function Y

```
YI=0,YZ=0,y1=y,y2=y
for i=1:3,
K1=log(y1)/log(x)
K2=log(y2)/log(x)
l1=limit(K1,x,inf)
l2=limit(K2,x,0)
r1=x^(K1-l1)
r2=x^(K2-l2)
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```
t1=limit(r1,x,inf)
t2=limit(r2,x,0)
y1=y1-t1*x^l1
y2=y2-t2*x^l2
Li(i)=l1
Ti(i)=t1
Lz(i)=l2
Tz(i)=t2
termYI(i)=t1*x^l1
termYZ(i)=t2*x^l2
YI=YI+t1*x^l1
YZ=YZ+t2*x^l2
end
```

6-Results:

1- The DNA method has a privilege of getting tow series for the function in the contrary to the currently applied methods as Taylor

2- Taylor method is inapplicable on some functions; meantime, we can have tow series when applying math DNA method, so Taylor method will fail when applied on some functions while the math DNA works.

$$f=\sqrt{x+\sqrt{x}}$$

$$g=\sqrt{x+4x^2+\sqrt{x}}$$

$$j=\frac{x+4}{\sqrt{x^2+x}}$$

3- Through a group of points we can get the arithmetical law without approximation unlike the methods on use in numerical analysis or interpolation.

4**-** Pythagoras equation might be converted to a non root equation in more than one variable by taking Pythagoras math DNA formula in more than one variable as follow:

$$S=\sqrt{\sum x^2}$$

$$S=x_m+\frac{\frac{1}{2}\sum x_i^2}{x_m}-\frac{\frac{1}{8}\sum x_i^4+\frac{1}{4}\sum_{i<j} x_i^2x_j^2}{x_m^3}\ldots\ldots\ldots\ldots \qquad x_m>x_i,x_j \quad i,j=1,2,\ldots\ldots n\backslash m$$

$$S=\sqrt{\sum_{i\backslash m} x_i^2}+\frac{x^2}{2\sqrt{\sum_{i\backslash m} x_i^2}}-\frac{x^4}{8(\sum_{i\backslash m} x_i^2)^{\frac{3}{2}}}\ldots\ldots\ldots\ldots \qquad x_m<x_i \quad i=1,2,\ldots\ldots,n\backslash m$$

7- Suggestions and recommendations:

This research is possible to be a beginning of a new mathematical mechanism, to be a self-independent science and to be a branch of mathematics. So I recommend that scientists work on it to develop it more.

8 – References

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