Divergence & Probability Density : A Hypothesis

By

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Multiplicative Probability, a^x series , Hypothesis , Probability Density

The earlier work by *Datta et al (1)* the note has been made with the algebraic properties of Probability ie $P(A) + P(B) = P(A * B)$. This is termed as multiplicative rule of Probability. By multiplication rule any number say a can be first diverged through a series of a^x , Where x is an integer like 0 to n .

Discussion : Assume $a = 1 = 1 * 1 \Rightarrow 1 + 1 = 2$

$\Rightarrow 2 * 2 = 4$ (Multiplicative) = 2^2
 $\Rightarrow 4 * 4 = 16 = 2^4$
 $\Rightarrow 16 * 16 = 256 = 2^8$
 $\Rightarrow 256 * 256 = 65536 = 2^{16}$
 $\Rightarrow 65536 * 65536 =$ The result is a Divergence Series
 $\Rightarrow$ ie Now adding all the result of $P(A) + P(B) = P(A * B)$
 $\Rightarrow 1 + a^x =$ where $a=1$ & $x= 32$

So $P(A * B)$ function = 42.....10 digit => Taking ln in both side we get

$\ln P(A * B) = \ln(2^{32}) = 32 * 0.69314$13 digit

Assuming 5 digit => Taking exp (22.18048) = 4293.....6digit . 1657

This may be Considered as Hypothesis or may not be !!

Conclusion : The above simplest hypothesis will explain the Probability to Probability density $f(x)$ ie $P(A * B)$. Which is a good numerical fit with our earlier work .

REF :

1. JAYDIP DATTA et al , A brief trip to the Universe of Numbers. Mathematical Disclosure Series , March 2020 ,DOI: [10.13140/RG.2.2.24323.66082](https://doi.org/10.13140/RG.2.2.24323.66082) .

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2. *Datta et al (1)*, PROBABILITY & WAVEFUNCTION : A NOTE