The Solution to "Landau's Problems"

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Properties of the "Rho" function

Principal operator: $\rho(p)$ [the prime function - delineating the number of integers between arbitrary sequenced primes].

I] *Goldbach's Conjecture*

1) Extend the definition of prime number to a generalized linear algebra vector quantity.

2) Thus, primes as collinear graphs mutually designate each other in magnitude sequence.

3) This is a continuous integrable character of the rho function; therefore, in a continuously generated arithmetic progression range (even numbers; multiples of "2"), the prime number field is a piecemeal duality representation of conjunct ordering - reflex symmetry - for arbitrary sets.

QED

II] *The Twin Prime Conjecture*

1) $\rho'(p) = 0$

2) Set $\int\rho'(p)$ to 1

3) Thus, a unilateral unitary metric standard deviation from primacy - is intrinsic in the domain.

QED

III] *Legendre's Conjecture*

1) Consider $\rho(p)$ to be the inverse function of $\pi(x)$ (the prime-counting function).

2) The value of the composite identity function, $\pi(\rho(p))$, necessarily results in the "prime-generating function" (the linear bijection relation, resulting in generating of baseline primacy).

3) (i) The introduction of the Lebesgue integral as metric results in a null standard deviation from the linear metric established in the prime-generating function - for the minimal coordinate graphing

extension case [in two dimensions] - therefore the case of squared variables in the prime-counting function yields a derivative of zero; or primes are arbitrarily generated for successive integral variables, n^2.

(ii) Corollary: The Near-Square Primes Conjecture

The Twin Prime Conjecture Proof, Legendre's Conjecture Proof

QED

REFERENCES

I] *Disquisitiones Arithmeticae*, Carl Friedrich Gauss. Yale University Press (03/11/1965).

II] *Invariant Measures*, Janos von Neumann. American Mathematical Society (03/01/1999).

III] *Divergent Series*, G. H. Hardy. American Mathematical Society; 2nd Edition (04/05/2000).

IV] *Review: Gotthold Eisenstein, Mathematische Werke*, Weil, André. Bulletin of the American Mathematical Society. Volume 82, Number 5 (1976), 658-663.