Formula to Generate the Sequence of Prime Numbers
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This paper contains a formula to sequentially generate the prime numbers, as desired. The details of obtention follow from a previous work of mine.

**FORMULA TO GENERATE THE SEQUENCE OF PRIME NUMBERS**

The formula is:

\[ p_{q+k} = \sum_{m=p_q+1}^{\infty} \left[ \frac{k'(m) k'(m)}{m} \prod_{j=2}^{p} \prod_{l=2}^{p} (1 - \langle m, j \rangle) \right] \left\langle m, m \left\langle k, \sum_{r=p_q+1}^{m} \frac{k'(r) k'(r)}{r} \prod_{j=2}^{p} \prod_{l=2}^{p} (1 - \langle r, j \rangle) \right\rangle \right\rangle, \quad (1) \]

where:

- \( k \geq 1, k \in \mathbb{N} = \{1, 2, 3, \ldots \}, \quad (2) \)
- \( \mathbb{P} = \{p_1, p_2, p_3, p_4, p_5, \ldots \}, \quad (3) \)
- \( k'(t) = \frac{1}{2} [(t - 1) + (0, t \text{ mod } 2)] \quad (5) \)
- \( \geq 2 |k'(t)| \in \mathbb{N}, \quad (6) \)

where:

- \( t - t \text{ mod } 2 = 2s \mid s \in \mathbb{N} \cup \{0\}, \quad (6) \)

and with \( t - 2s \) being the integer remainder of \( t/2 \), and where \( \langle x, y \rangle \) is the inner product:

\[ \langle x, y \rangle = \int_{-1}^{1} \cos(x \pi \xi) \cos(y \pi \xi) \, d\xi. \quad (7) \]

The formula does not depend on a previous knowledge on the sequence of prime numbers. One may obtain the prime number general term from Eq. (1) just setting \( q \) to start from it.

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