

## Infinite/Harmonic Primality Test

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By using the Infinite/Harmonic series(partial) we prove if n is prime and show factors if n is not prime at the same time ; without trial division or modulo.

$$\sum_{k=2}^{\sqrt{n}} \frac{1}{k} \times n$$

n is prime iff all terms are not integers.

If a term is equal to an integer means that k and “the term” is a factor of n.

The upper limit is set to  $\sqrt{n}$  because we continue the series/sequence while each term is  $\log_k(n) \geq 2$  .