One formula that produces primes

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Abstract

Here I present one formula that produces prime numbers. There are counterexamples for this formula.

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The formula

The first formula is:

$$1 + (n!)^2 - \sigma(n!)(n!)^2 + 2 \sum_{k=1}^{-1+\sigma(n!)} \lfloor \frac{k(1 + (n!)^2)}{\sigma(n!)} \rfloor$$

$\sigma(n!)$ is the sum of the divisors of n!

Sequence

1, 1, 1, 1, 1, 13, 1, 17, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 61, 1, 1, 1, 1, 1, 1, 1, 1, 61, 1, 1, 1, 193, 1, 1, 1, 757, 61, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 109, 1, 1, 1, 181, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 113...

A counterexample is found at n=7880, here the result is 380927609 = 15761*24169. Interesting properties may be found in this sequence, for example many primes are 2n+1.