There Is No Largest Prime Number

With an introduction to a new proof technique

Euclid of Alexandria

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27th International Symposium on Prime Numbers, –280
Theorem
There is no largest prime number.

Proof.
1. Suppose \( p \) were the largest prime number.
2. Let \( q \) be the product of the first \( p \) numbers.
3. Then \( q + 1 \) is not divisible by any of them.
4. Thus \( q + 1 \) is also prime and greater than \( p \).