

# There Is No Largest Prime Number

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## There Is No Largest Prime Number

The proof uses *reductio ad absurdum*.

Theorem

*There is no largest prime number.*

1. Suppose  $p$  were the largest prime number.
2. Consider the number  $q = p + 1$ .
3.  $q$  is not prime, because it is divisible by  $p$ .
4. But  $q + 1$  is greater than 1, thus divisible by some prime number not in the first  $p$  numbers.

## There Is No Largest Prime Number

The proof uses *reductio ad absurdum*.

### Theorem

*There is no largest prime number.*

1. Suppose  $p$  were the largest prime number.
2. Let  $q$  be the product of the first  $p$  numbers.
3.  $q + 1$  is greater than 1, thus divisible by some prime number not in the first  $p$  numbers.
4. But  $q + 1$  is greater than 1, thus divisible by some prime number not in the first  $p$  numbers.

## There Is No Largest Prime Number

The proof uses *reductio ad absurdum*.

### Theorem

*There is no largest prime number.*

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. But  $q + 1$  is greater than 1, thus divisible by some prime number not in the first  $p$  numbers.

## A longer title

- ▶ one
- ▶ two