



# There Is No Largest Prime Number

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The proof uses *reductio ad absurdum*.

## Theorem

*There is no largest prime number.*

① Suppose  $p$  were the largest prime number.

④ But  $q + 1$  is greater than 1, thus divisible by some prime number not in the first  $p$  numbers.

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

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- 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

One can prove that

$$1 = 1$$



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Example

For clarity:

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- second bullet point ...