

# **The Life and Times of Times of Life**

October 5th 2018

# There Is No Largest Prime Number

1. Suppose  $p$  were the largest prime number.
2. Consider the number  $q = p + 1$ .
3. But  $q$  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

1. Suppose  $p$  were the largest prime number.
2. Let  $q$  be the product of the first  $p$  numbers.
3.  $q$  is not a prime number.
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

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.