There Is No Largest Prime Number

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Outline

What Are Prime Number?

Definition

A prime number is number that has exactly two divisors.

Example

- 2 is prime (two divisors: 1 and 2).
- 3 is prime (two divisors: 1 and 3).
- 4 is not prime (three divisors: 1, 2, and 4).

There Is No Largest Prime Number

The proof uses *reductio ad absurdum*.

Proof.

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

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What's Still To Do?

Answered Questions

How many primes are there?

Answered Questions

Is every even number the sum of two prime?

Whats Still To Do?

- Answered Questions
  - How many primes are there?
- Open Questions
  - Is every even number the sum of two primes?

Whats Still To Do?

Answered Questions

How many primes are there?

Open Questions

Is every even number the sum of two primes?

Open Questions

Is every even number the sum of two primes?[1]

An Algorithm For Finding Prime Numbers.

```
int main (void)
{
std::vector<bool> is_prime (100, true);
for (int i = 2; i < 100; i++)
if (is_prime[i])
{
std::cout << i << " ";
for (int j = i; j < 100; is_prime [j] = false, j+=i);
}
return 0;
}
```

Note the use of `std::`.

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[Goldbach, 1742] Christian Goldbach.
A problem we should try to solve before the ISPN 43 deadline, *Letter to Leonhard Euler*, 1742.