

What is the 10001st prime number?

According to Wikipedia, the  $n$ th prime, written  $p_n$ , is approximated by

$$p_n > n \log n, n \geq 1$$

But  $p_n$  isn't always the next prime after  $n \log n$ . So start counting at 2.

```
require 'prime'
def nth_prime(n)
  counter = 1
  prime = 2
  while counter < n do
    prime = next_prime(prime)
    counter += 1
  end
  prime
end
```

```
def next_prime(n)
  loop do
    return n if Prime.prime?(n)
    n += 1
  end
end
```