# 实现 Math.sqrt

## 题目描述

要求不用数学库，求 sqrt(2)精确到小数点后 10 位

## 代码

function sqrt(num) {  
 if (num < 0) return num;  
 let start = 0;  
 let end = num;  
 let mid = num >> 1;  
 const DIGIT\_COUNT = 10;  
 const PRECISION = Math.pow(0.1, DIGIT\_COUNT);  
 while (Math.abs(+(num - mid \* mid).toFixed(DIGIT\_COUNT)) > PRECISION) {  
 mid = start + (end - start) / 2.0;  
 if (mid \* mid < num) {  
 start = mid;  
 } else {  
 end = mid;  
 }  
 }  
  
 return mid;  
}  
  
function sqrtNewton(n) {  
 if (n <= 0) return n;  
  
 let res;  
 let last;  
 const DIGIT\_COUNT = 10;  
 const PRECISION = Math.pow(0.1, DIGIT\_COUNT);  
  
 res = n;  
  
 while (Math.abs(last - res) > PRECISION) {  
 last = res;  
 res = (res + n / res) / 2;  
 }  
  
 return res;  
}