Taking Square Roots Using Four Functions

Write the **R** function `mysqrt.r` that calculates the square root of a real number using only the four functions on a basic calculator: addition, subtraction, multiplication and division.

Here is how to calculate the square root of a given number using only four functions:

1. Let A represent the number we want to take the square root of.
2. Set L equal to A.
3. Set W equal to $\frac{A}{L}$.
4. Set L equal to $\frac{L+W}{2}$.
5. Set W equal to $\frac{A}{L}$.
6. Repeat Steps 4 and 5 until the relative distance between L and W is less than some predefined tolerance, which in our case will be 0.000001.
7. Return $\frac{L+W}{2}$.

You will not need to do any error-checking on this function.

Here are several examples.

```
> mysqrt(49)
[1] 7
> mysqrt(121)
[1] 11
> mysqrt(1024)
[1] 32
> mysqrt(82)
[1] 9.055385
> mysqrt(101)
[1] 10.04988
> mysqrt(1000000)
[1] 1000
> mysqrt(1000001)
[1] 1000
```