```java
1  import components.simplereader.SimpleReader;

5
6  // DAVID PARK IS AUTHOR
7
8  public final class Newton2 {
9
10     private Newton2() {
11     }
12
13     private static double sqrt(double x) {
14         double guess = x;
15
16         double relativeError = 0.01;
17
18         double newGuess;
19
20         if (x == 0) {
21             return 0;
22         }
23
24         while (true) {
25             newGuess = 0.5 * (guess + x / guess);
26             if (Math.abs(newGuess - guess) < relativeError) {
27                 break;
28             }
29             guess = newGuess;
30         }
31         return guess;
32     }
33
34     /**
35      * Main method.
36      *
37      * @param args
38      *            the command line arguments
39      */
40     public static void main(String[] args) {
41         SimpleReader in = new SimpleReader1L();
42         SimpleWriter out = new SimpleWriter1L();
43         /*
44          * Put your main program code here; it may call myMethod as shown
45          */
46         out.println(sqrt(4));
47         out.println(sqrt(16));
48         out.println(sqrt(81));
49         out.println(sqrt(0));
50
51         in.close();
52         out.close();
53     }
54
55  }
56
```