



Shiny App - Root Finding Methods



By: Kaitlyn Scheppa, Tyler Simpson,
and Orel Yoshia



Introduction

- We created a Shiny App that illustrates different root-finding methods that we were taught throughout the semester.
- The user enters a one-dimensional function for which the root is requested and can also include the initial points.
- The user is then able to see the root of that function.
- Message is displayed if there is an error.

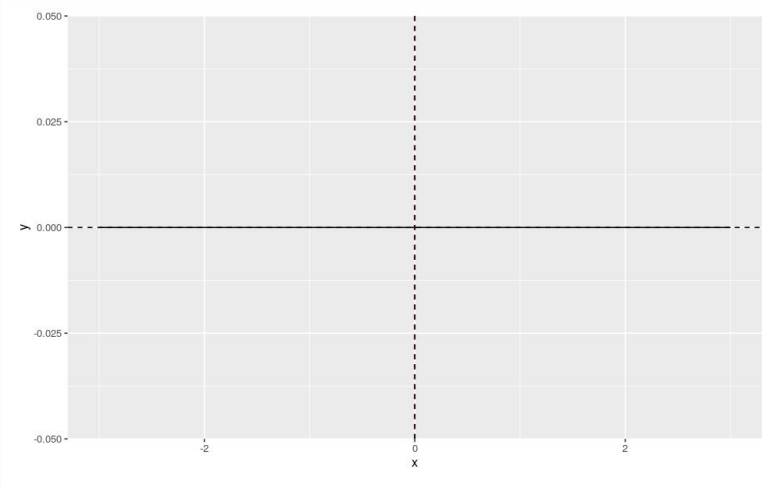
Motivation

- Learn something new by creating a shiny app
- Perfect our knowledge of root finding methods through the development and testing of this app

Methods Used:

- Fixed Point
- Bisection
- Newton-Raphson

Root Finding Methods



The root is 0

Please insert a function

What is x0?

What is x1? (if using bisection)

Which Root Finding Method?

☒ Fixed Point

☐ Bisection

☐ Newtons

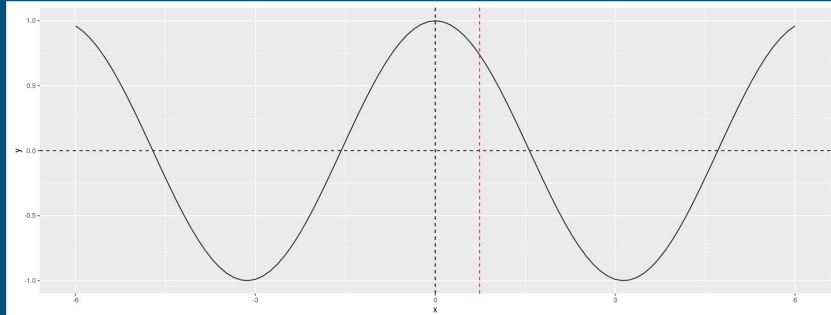
Increase/decrease the zoom of the graph around origin

1 3 10

1 2 3 4 5 6 7 8 9 10

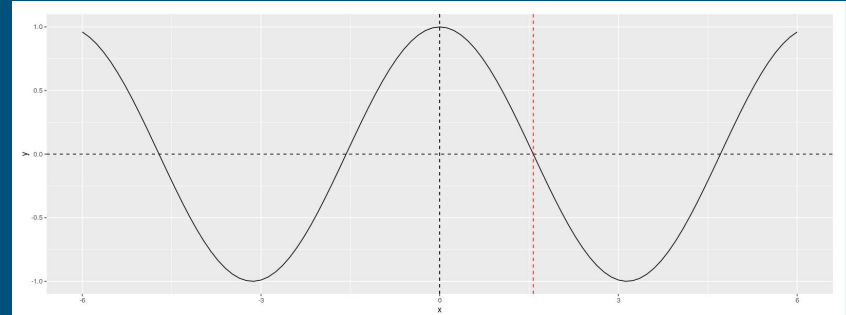
Place a vertical line

Root Finding Methods - $f(x) = \cos(x)$



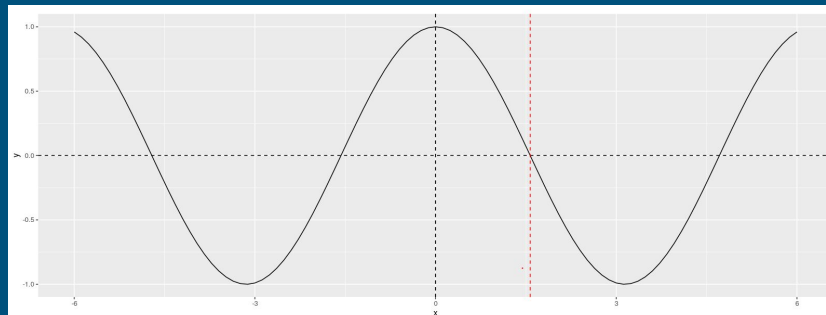
Fixed Point

The root is 0.739085133523792



The root is 1.57079632719979

Bisection



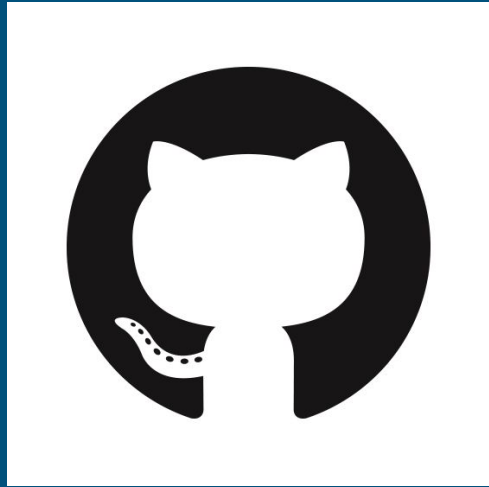
**Newton -
Raphson**

The root is 1.57079632679549

Demo



Thank You!



[Link to our GitHub](#)