# **Sample Runs and Analysis.**

## Bisection

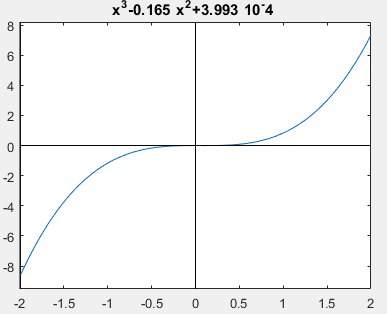
Inputs:

* Initial guesses:
* Precision: 0.00001
* Max iterations:

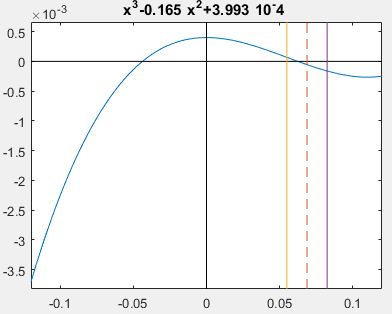
Outputs:

* Root:
* Time:
* Iterations:
* Precision:
* Theoretical Error =

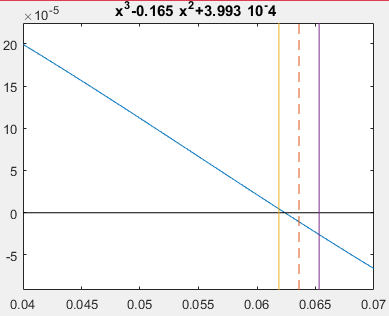
Function plotting & step simulation.



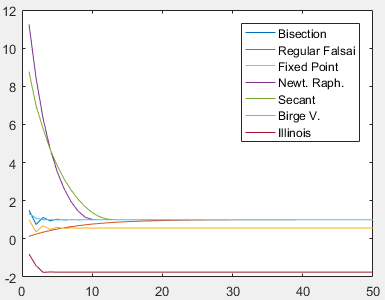
Function plotting



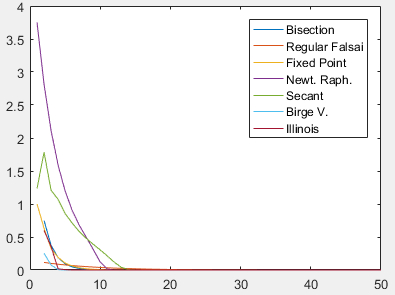
Bisection 3rd iteration



Bisection 6th iteration



Comparison between the obtained root and number of iterations for each method.



Comparison between the relative error and number of iterations for each method.

## False-Position

* First Test Case

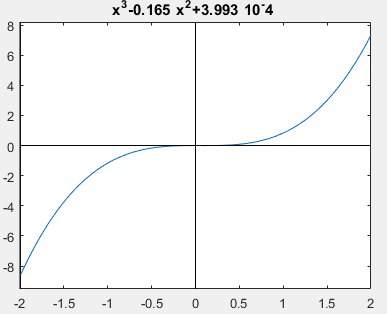
Inputs:

* Initial guesses:
* Precision: 0.00001
* Max iterations:

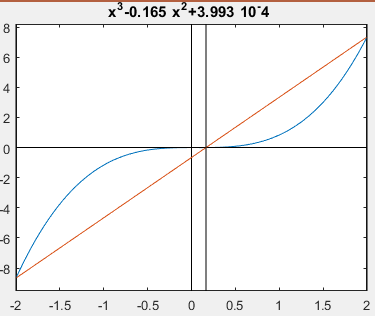
Outputs:

* Root:
* Time:
* Iterations:
* Precision:
* Theoretical Error =

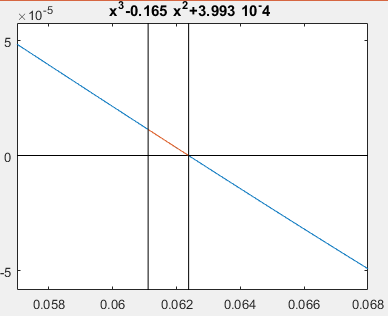
Function plotting & step simulation.



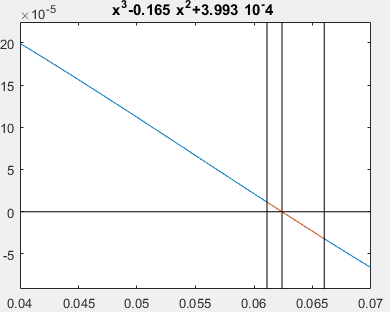
Function plotting



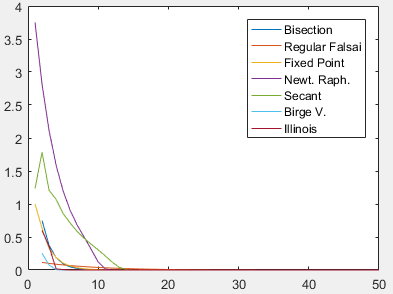
False-Position 1st iteration



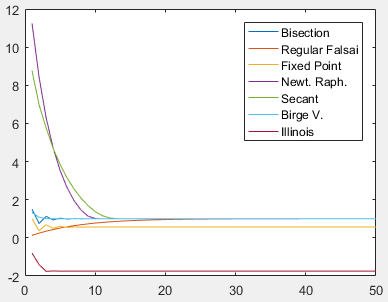
False-Position 5th (Last) iteration



False-Position 3th iteration



Comparison between the relative error and number of iterations for each method.



Comparison between the obtained root and number of iterations for each method.

* Second Test Case

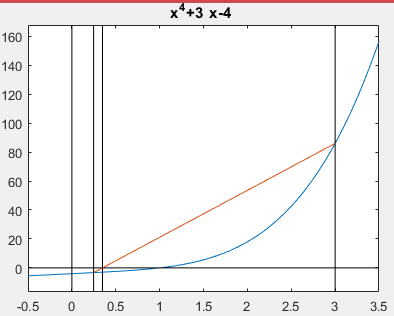
Inputs:

* Initial guesses:
* Precision: 0.00001
* Max iterations:

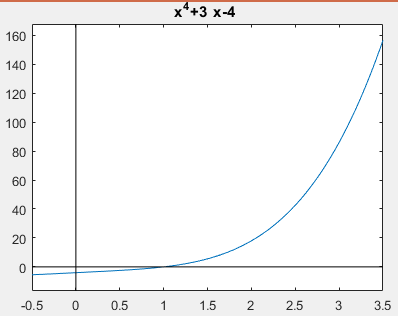
Outputs:

* Root:
* Time:
* Iterations:
* Precision:
* Theoretical Error =

Function plotting & step simulation.

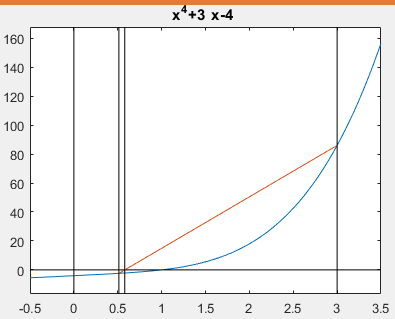


False-Position 3th iteration

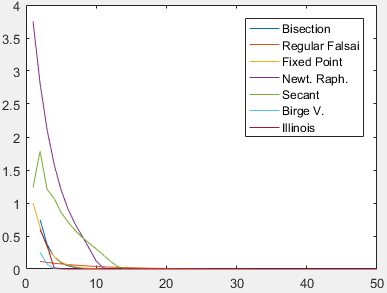


Function plotting

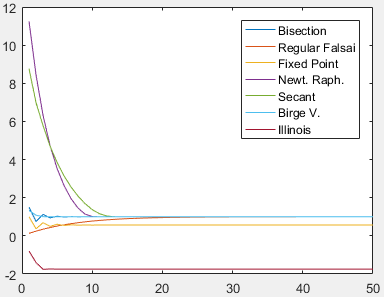
**Node:** The difference between the plot for the 3rd and the 6th is very small because this method is very slow for this test case.



False-Position 6th iteration



Comparison between the relative error and number of iterations for each method



Comparison between the obtained root and number of iterations for each method.

## Fixed Point

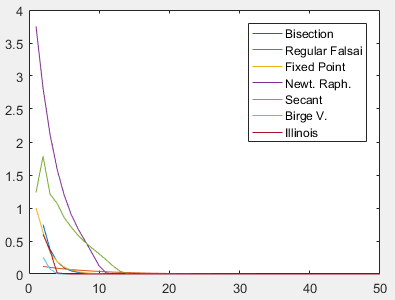
Inputs:

* Initial guesses:
* Precision: 0.00001
* Max iterations:

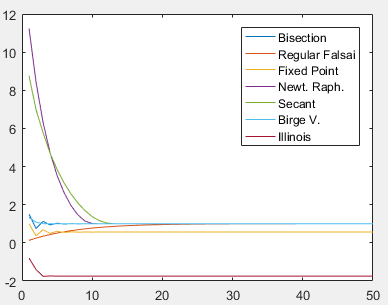
Outputs:

* Root:
* Time:
* Iterations:
* Precision:
* Theoretical Error =

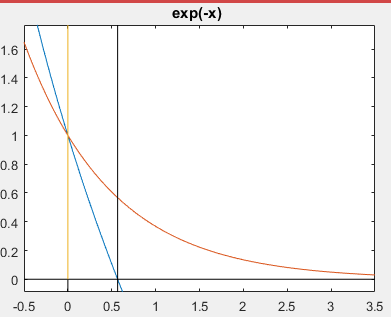
Function plotting & step simulation.



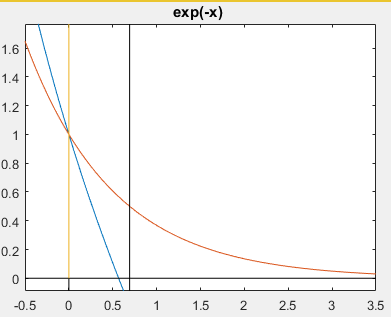
Comparison between the relative error and number of iterations for each method



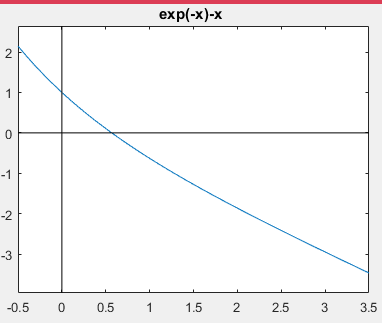
Comparison between the obtained root and number of iterations for each method.



12th iteration plotting



3rd iteration plotting



Function Plotting

## Newton-Raphson

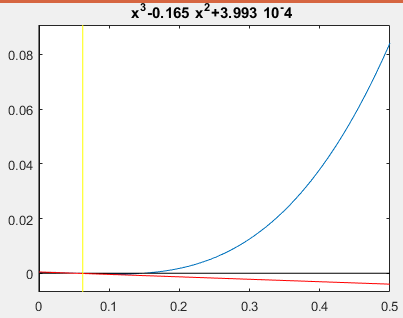
Inputs:

* Input equation:
* Initial guesses:
* Precision: 0.00001
* Max iterations:

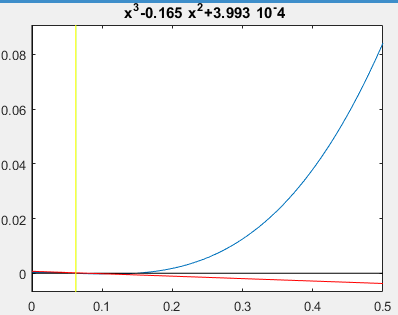
Outputs:

* Root:
* Time:
* Iterations:
* Precision:
* Theoretical Error =

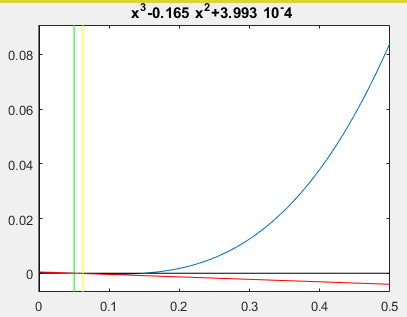
Function plotting & step simulation.



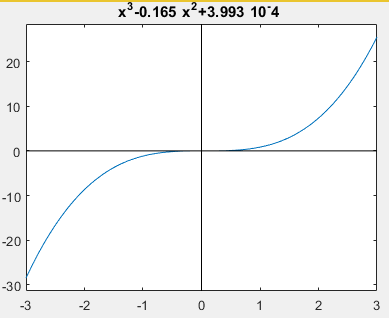
Third (last) iteration



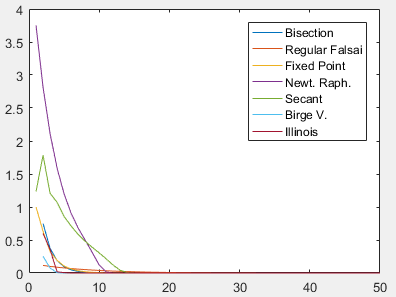
Second iteration



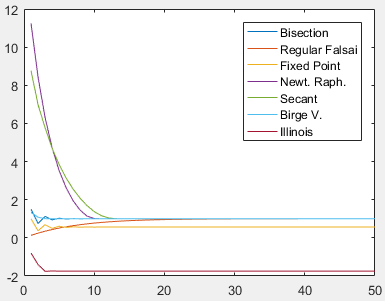
First iteration



Function plotting



Comparison between the relative error and number of iterations for each method



Comparison between the obtained root and number of iterations for each method.

## Secant Method

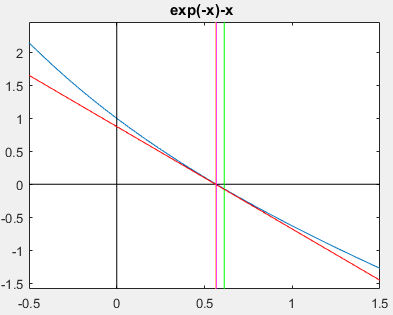
Inputs:

* Input equation:
* Initial guesses:
* Precision: 0.00001
* Max iterations:

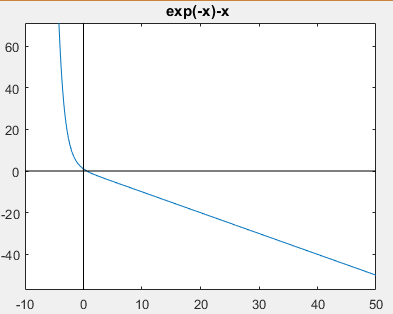
Outputs:

* Root:
* Time:
* Iterations:
* Precision:
* Theoretical Error =

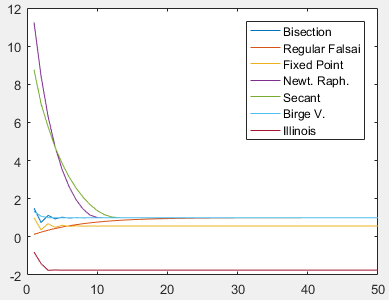
Function plotting & step simulation.



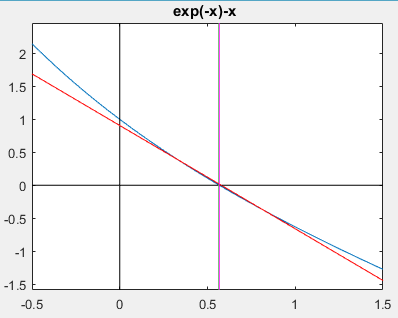
3rd iteration plotting



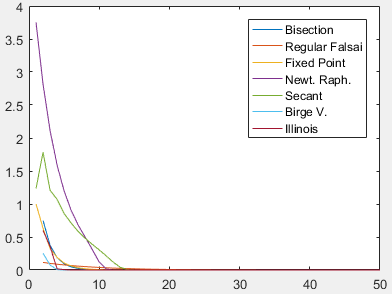
Function plotting



Comparison between the obtained root and number of iterations for each method.



4rd (Last) iteration plotting



Comparison between the relative error and number of iterations for each method