### Bisection method:

The bisection is in mathematics is a root finding method that repeatedly bisects an interval and then bisect a sub-interval in which a root must lie for further processing.

#### Advantages:

* The bisection method is always convergent. Since the method brackets the root, the method is guaranteed to converge.
* As the iterations are conducted, the interval gets halved. So one can guaranteed the error in the solution of the equation.

#### Disadvantages:

* The convergence of bisection method is slow as it is simply based on halving the interval.
* If one of the initial guesses is closer to the root, it will take larger number of iterations to reach the root.

### False position method:

False position method is an algorithm for finding roots which retains the prior estimate for which the function value has opposite sign from the function value at the current best estimate of the root.

#### Advantages:

* It always converges.
* It doesn’t require the derivative
* It is quick method.

#### Disadvantages:

* One of the interval definitions can get struck.
* It may slowdown an unfavorable situations.

### Newton Rapson method:

The Newton-Rapson method is a way to quickly find a good approximation for the root valued function.

#### Advantages:

* Fast convergence as long as initial guess is closure to the solution.
* Large region of convergence.

#### Disadvantages:

* It requires the derivatives of f(x), if complicated then the method will tend to fail.
* It require very accurate initial value or initial guess xo must be near the root you need to approximate.