Advantages and Disadvantages of Finding Root of Equations Methods

1. The Bisection Method:

Advantages

* Simple and easy to implement
* One function evaluation per iteration
* The size of the interval containing the zero is reduced by 50% after each iteration
* The number of iterations can be determined a priori
* No knowledge of the derivative is needed
* The function doesn’t have to be differentiable

Disadvantages

* Slow to converge
* Good intermediate approximations may be discarded
* It can’t be used to find roots when the function is tangent is the axis and doesn’t pass through the axis e.g. f(x)=

1. The False-Position Method:

Advantages

* Simple and easy to implement
* Brackets the root

Disadvantages

* Slow to converge
* Like bisection, need an initial interval around the root

1. The Newton-Raphson Method:

Advantages

* Suitable for large size system
* It is faster, reliable and the results are accurate
* Number of iteration are less to reach convergence and also iterations are independent of the number of buses

Disadvantages

* Programming logic is complex than GS method
* Required more memory
* Number of calculation per iteration are higher than GS method