

# **DTS104TC**

# **NUMERICAL METHODS**

## **TUTORIAL 1**

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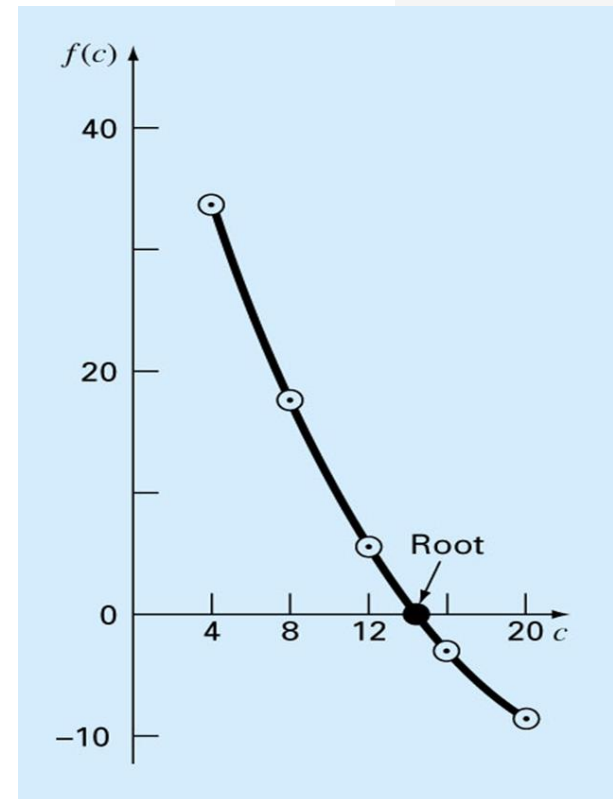
1. Continue to solve the Bisection method example provided in lecture-1, until the approximate error falls below a stopping criterion of  $\varepsilon_s = 0.5\%$ .

$$f(c) = \frac{668.06}{c} (1 - e^{-0.146843c}) - 40$$

Initial values:

$X_l = 12$

$X_u = 16$



What if you try a different set of initial guess?



2. Assume that we are limited to use 3 significant figures for the solution. Note the correct answers are  $x_1=1.00002$  and  $x_2=0.99998$ . For 3 significant figures,  $x_1=x_2=1.00$

(a) Solve the following set of equations using Gauss Elimination and a pivoting strategy:

$$2x_1 + 100,000x_2 = 100,000$$

$$x_1 + x_2 = 2$$

(b) Repeat the solution after scaling the equations so that the maximum coefficient in each row is 1

(c) Finally, use the scale coefficient to determine whether pivoting is necessary.

