Transcendental Project

Name: Frank Secretain
Course: St. Lawrence Course Code

This project aims to numerically solve for x in a transcendental math equation. A transcendental equation is an equation where the variable being solved for does not have an analytical solution. It is an introduction to numerical modelling and computational methods.

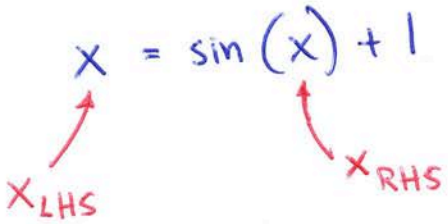
Given a transcendental equation, such as:

$$\sin(x) = x - 1$$

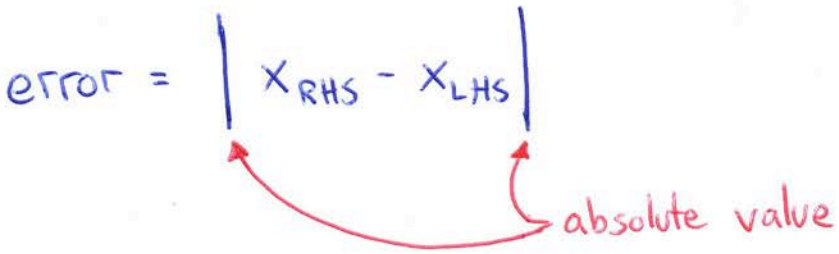
The equation was solved for one of the x values, such as:

$$x = \sin(x) + 1 \qquad \text{or} \qquad x = \sin^{-1}(x - 1)$$

The x's on the right hand side will be referred to as x_RHS. The single x on the left hand side will be referred to as x_LHS.



Each iteration was labelled and the error was calculate using;



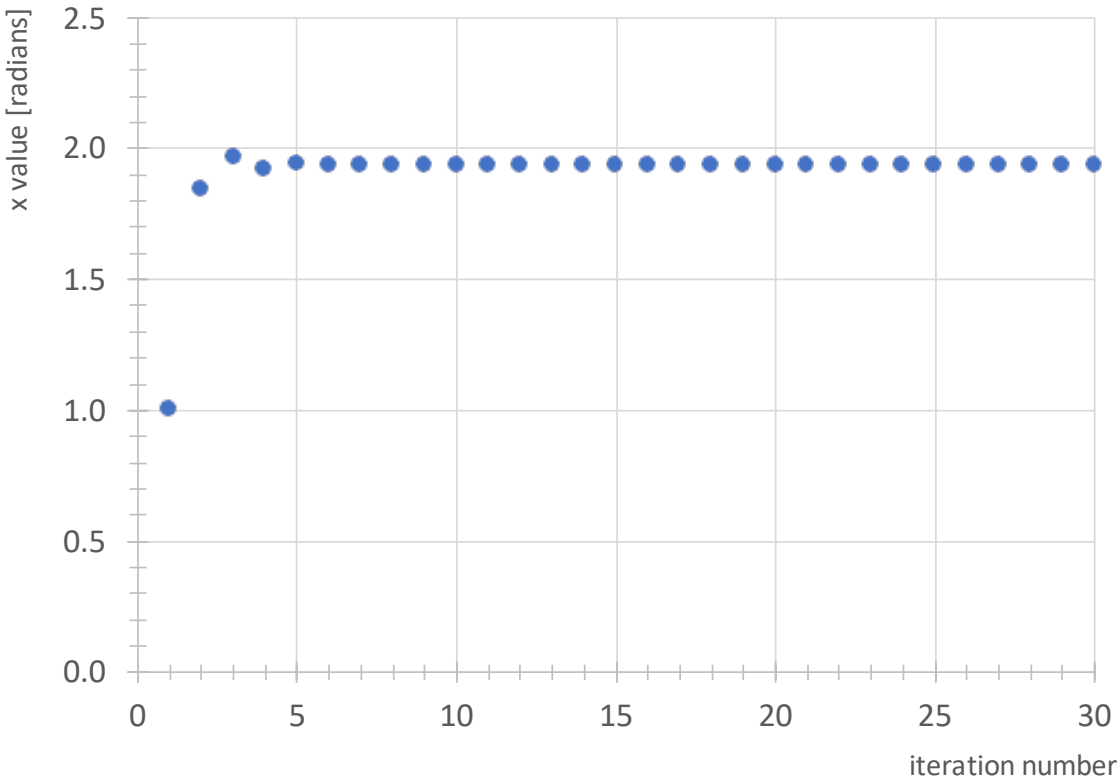


figure 1: plots the x value (x _RHS) versus iteration number of the transcendental equation. The solution converges on x=1.93456.

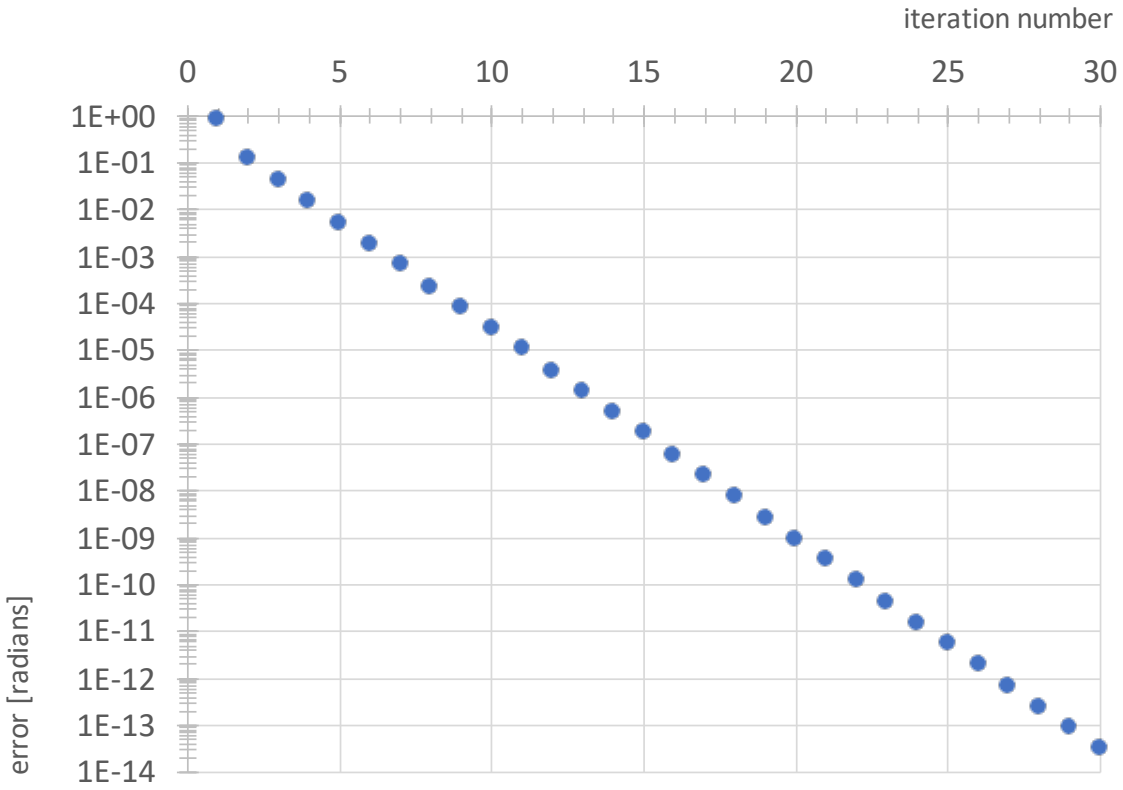


figure 2: plots the error versus iteration number of the transcendental equation. This is plotted on a semi-log plot to visualize the decreasing error of the solution.