

Command window

clear

clc

format short g

x(1) = 0.5;

k = 1;

tol = 1E-21;

max = 50;

err(1) = 0;

syms x

g = (exp(-0.5*x) * (4-x)) - 2;

g_prime = diff(g);

for k = 2:max;

x(k) = (x(k-1) - (subs(g, x(k-1)) / subs(g_prime, x(k-1))));

k = [k k];

err(k) = abs(x(k) - x(k-1)) * 100;

if err(k) <= tol, break, end;

Table = [k' x' err']

1	0.5	0
2	0.83889	33.889
3	0.88571	4.6065
4	0.88571	0.07526
5	0.88571	$1.9704 e^{-0.5}$
6	0.88571	$1.3545 e^{-2}$
7	0.88571	0