```matlab
% Liam Fruzyna
% COSC 4540
% Homework 4 #1

clear all
close all

% initialize functions
R1 = @(v) (5 + v)/3;   %2*v - 4; %
R2 = @(u) (4 + u)/2;   %3*u - 5;  %

% initialize arrays
uJ(1) = 0;
vJ(1) = 0;
uGS(1) = 0;
vGS(1) = 0;

% number of iterations
N = 10;

% iterate N times
for k = 1:N
    % run for jacobi
    uJ(k+1) = R1(vJ(k));
    vJ(k+1) = R2(uJ(k));

    % run for gauss-seidel
    uGS(k+1) = R1(vGS(k));
    vGS(k+1) = R2(uGS(k+1));
end

% calculate error and plot values for jacobi
errorJ = [uJ(k+1) - 2.8, vJ(k+1) - 3.4];
nerrorJ = max(abs(errorJ))
plot(uJ)
hold on
plot(vJ,'k')

figure

% calculate error and plot values for gauss-seidel
errorGS = [uGS(k+1) - 2.8, vGS(k+1) - 3.4];
nerrorGS = max(abs(errorGS))
plot(uGS)
hold on
plot(vGS,'k')
```
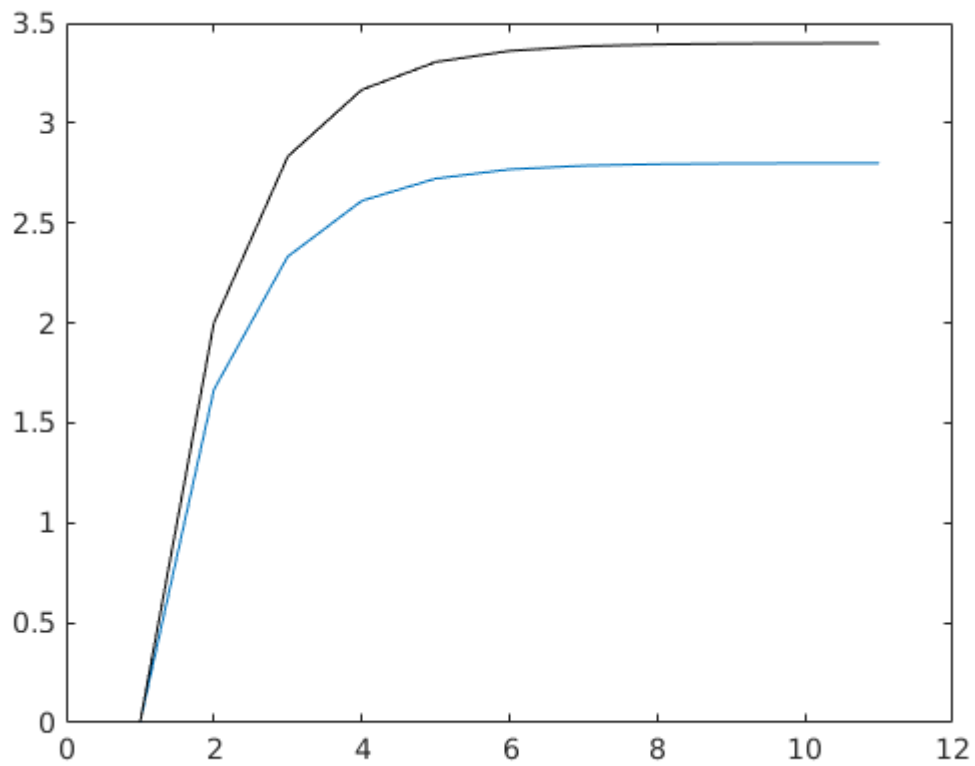
```
>> hw4_1
nerrorJ =
      4.372427983541094e-04
nerrorGS =
      1.124595674362183e-07
```

Jacobi

Gauss-Seidel