```matlab
1  function[]=JacobiIterSelf(A,b)
2  max_tol=(10)^-8;
3  iteration=150;
4  n=length(b);
5  x1=zeros(n,1);
6  x2=x1;
7  k=0;
8
9  [M,N]=size(A);
10 p=Inf;
11 error=norm(A*x2 - b,p);
12
13 tol=Inf;
14
15 while tol>max_tol && k<iteration
16     x1=x2;
17  for i=1:N
18  temp = 0;
19  for j=1:N
20  if j ~= i
21  temp = temp + A(i,j)*x1(j);
22  end
23  end
24  x2(i) = (b(i,1)-temp)/A(i,i);
25  end
26  tol = norm(x2-x1,p)/norm(x2,p);
27  k = k+1;
28  error = norm(A*x2-b,p);
29  data1(k,:) = x2';
30  data2(k,:) = error;
31 end
32 for i = 1:k
33  data2(i,2) = i;
34 end
35 disp('x2');
36 disp(x2);
37 disp("error");
38 disp(error);
39 disp("data1");
40 disp(data1);
41 hold on
42 plot(data2(:,2),data2(:,1));
43 xlabel('Number of Iterations');
44 ylabel('Residual Error');
45 hold off
46 end
47
48
49
```

```
1 A = [6 1 1 1 1;1 7 1 1 1;1 1 8 1 1;1 1 1 9 1;1 1 1 1 10];
2 b = [-10;-6;0;8;18];
3 JacobiIterSelf(A,b)
```

```
>> A5P1
x2
   -2.0000
   -1.0000
    0.0000
    1.0000
    2.0000

error
   3.5948e-08

data1
   -1.6667   -0.8571         0    0.8889    1.8000
   -1.9720   -1.0032   -0.0206    0.9693    1.9635
   -1.9848   -0.9915    0.0053    1.0036    2.0026
   -2.0033   -1.0038   -0.0037    0.9965    1.9967
   -1.9976   -0.9980    0.0017    1.0016    2.0014
   -2.0011   -1.0010   -0.0009    0.9992    1.9992
   -1.9994   -0.9995    0.0005    1.0004    2.0004
   -2.0003   -1.0003   -0.0002    0.9998    1.9998
   -1.9998   -0.9999    0.0001    1.0001    2.0001
   -2.0001   -1.0001   -0.0001    0.9999    1.9999
   -2.0000   -1.0000    0.0000    1.0000    2.0000
   -2.0000   -1.0000   -0.0000    1.0000    2.0000
   -2.0000   -1.0000    0.0000    1.0000    2.0000
   -2.0000   -1.0000   -0.0000    1.0000    2.0000
   -2.0000   -1.0000    0.0000    1.0000    2.0000
   -2.0000   -1.0000   -0.0000    1.0000    2.0000
   -2.0000   -1.0000    0.0000    1.0000    2.0000
   -2.0000   -1.0000   -0.0000    1.0000    2.0000
   -2.0000   -1.0000    0.0000    1.0000    2.0000
   -2.0000   -1.0000   -0.0000    1.0000    2.0000
   -2.0000   -1.0000    0.0000    1.0000    2.0000
   -2.0000   -1.0000   -0.0000    1.0000    2.0000
   -2.0000   -1.0000    0.0000    1.0000    2.0000
   -2.0000   -1.0000   -0.0000    1.0000    2.0000
   -2.0000   -1.0000    0.0000    1.0000    2.0000

>>
```
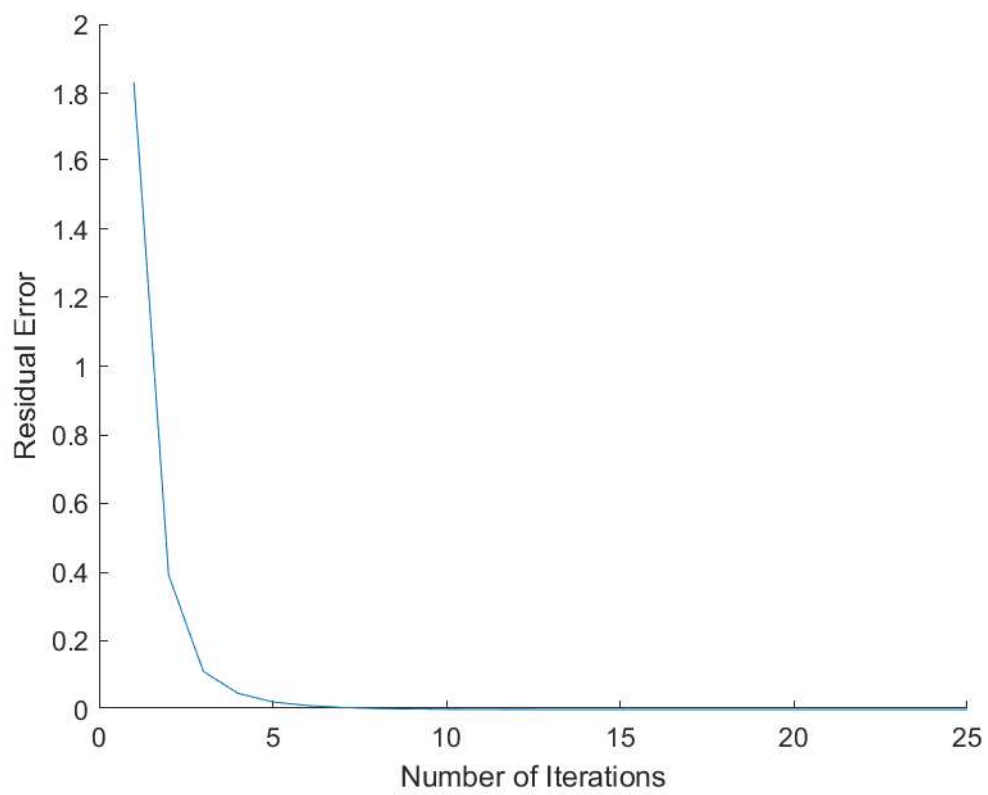
```matlab
1 function[]=GSIterSelf(A,b)
2 max_tol=(10)^-8;
3 iteration=150;
4 n=length(b);
5 x1=zeros(n,1);
6
7 k=0;
8
9 [M,N]=size(A);
10 p=Inf;
11 error=norm(A*x1 - b,p);
12
13 tol=Inf;
14
15 while tol>max_tol && k<iteration
16     x2=x1;
17  for i=1:N
18  temp = 0;
19  for j=1:i-1
20  temp = temp + A(i,j)*x1(j);
21  end
22  for j=i+1:N
23  temp = temp + A(i,j)*x2(j);
24
25  end
26  x1(i) = (b(i,1)-temp)/A(i,i);
27  end
28  tol = norm(x1-x2,p)/norm(x1,p);
29  error = norm(A*x1-b,p);
30  k = k+1;
31  data1(k,:) = x1';
32  data2(k,:) = error;
33
34 end
35 for i = 1:k
36  data2(i,2) = i;
37 end
38 disp('x2');
39 disp(x2);
40 disp("error");
41 disp(error);
42 disp("data1");
43 disp(data1);
44 hold on
45 plot(data2(:,2),data2(:,1));
46 xlabel('Iteration');
47 ylabel('Residual Error');
48 hold off
49 end
```

```
1 A = [6 1 1 1 1;1 7 1 1 1;1 1 8 1 1;1 1 1 9 1;1 1 1 1 10];
2 b = [-10;-6;0;8;18];
3 GSIterSelf(A,b)
```

```
>> A5P2
x2
   -2.0000
   -1.0000
    0.0000
    1.0000
    2.0000

error
   1.3405e-09

data1
   -1.6667   -0.6190    0.2857    1.1111    1.8889
   -2.1111   -1.0249    0.0170    1.0256    2.0093
   -2.0045   -1.0068   -0.0030    1.0005    2.0014
   -1.9987   -1.0000   -0.0004    0.9998    1.9999
   -1.9999   -0.9999    0.0000    1.0000    2.0000
   -2.0000   -1.0000    0.0000    1.0000    2.0000
   -2.0000   -1.0000    0.0000    1.0000    2.0000
   -2.0000   -1.0000   -0.0000    1.0000    2.0000
   -2.0000   -1.0000   -0.0000    1.0000    2.0000
   -2.0000   -1.0000    0.0000    1.0000    2.0000
   -2.0000   -1.0000    0.0000    1.0000    2.0000

>>
```