```matlab
function [y] = GS(A,b,y)
D=diag(diag(A));
L=-1*tril(A,-1);
U=-1*triu(A,1);
y=inv(D-L)*U*y+inv(D-L)*b;
end
```

```matlab
function [y] = Jacobi(A,b,y)
D=diag(diag(A));
L=-1*tril(A,-1);
U=-1*triu(A,1);
B=inv(D)*(L+U);
g=inv(D)*b;
y=B*y+g;
end
```

```matlab
n=100;
epsilon=1;
h=1/n;
a=1/2;
A=diag(epsilon*ones(1,n-2),-1)+diag((-2*epsilon-
h)*ones(1,n-1))+diag((epsilon+h)*ones(1,n-2),1);
b=zeros(n-1,1);
b(1:n-2,1)=a*h^2;  b(n-1,1)=a*h^2-(epsilon+h);
syms x;
f=(((1-a)/(1-exp(-1/epsilon)))*(1-exp(-x/epsilon)))+a*x;
f=matlabFunction(f);
y=zeros(n-1,1);
for i=1:n-1
    y(i)=f(i*h);
end
J_x0=zeros(n-1,1);J_x1=Jacobi(A,b,J_x0);
while(norm(J_x0-J_x1,Inf)>10^(-4))
    J_x0=J_x1;
    J_x1=Jacobi(A,b,J_x0);
end
GS_x0=zeros(n-1,1);GS_x1=GS(A,b,GS_x0);
while(norm(GS_x0-GS_x1,Inf)>10^(-4))
    GS_x0=GS_x1;
    GS_x1=GS(A,b,GS_x0);
end
J_res2=norm(J_x1-y,2)
J_resInf=norm(J_x1-y,Inf)
GS_res2=norm(GS_x1-y,2)
GS_resInf=norm(GS_x1-y,Inf)
```

```
J_res2 =

    0.6699

J_resInf =

    0.0951

GS_res2 =

    0.6974

GS_resInf =

    0.0991
```

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