Homework.

$D_A u \to 4u_{i,j}$

$L_A u \to -u_{i-1,j} - u_{i,j-1}$

$V_A u \to -u_{i+1,j} - u_{i,j+1}$.

$$4u_{i,j} - u_{i-1,j} - u_{i,j} - u_{i+1,j} - u_{i+1,j} - u_{i,j+1} = h^2 f_{i,j}.$$

$$\left(\frac{1}{\omega} D_A + L_A\right) u^{k+1} = \left(\frac{1-\omega}{\omega} D_A - V_A\right) u^k + h^2 f.$$

$$u_{i,j}^{k+1} = \frac{\omega}{4}\left(\frac{1-\omega}{\omega} u_{i,j}^k + u_{i-1,j}^{k+1} + u_{i+1,j}^k + u_{i,j+1}^k + h^2 f_{i,j}\right)$$

...

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搜索 (Ctrl+Shift+Space)

Chufeng

新建 打开 保存 转至 查找 书签 重构 代码问题 调试器 运行节 分节符 运行并前进 运行到结束 暂停 步进 停止

文件 导航 代码 分析 节 运行

/ › MATLAB Drive

hw7.m

/MATLAB Drive/hw7.m

```
% Set number of iterations to be performed
nk = 5000;
% Set parameters alpha and beta
alpha = 2;
beta = 3;
% Set the number of meshpoints so the interior has N x N such p
N = 50;

J_error = poisson_jacobi_error(alpha, beta, N, nk);
GS_error = poisson_GS_error(alpha, beta, N, nk);
iterations = [1:nk];

plot( ...
    iterations, log(J_error), ...
    iterations, log(GS_error) ...
);

axis square;
title("log(error) || Iterations");
ylabel('log(norm(Ax-b))');
xlabel('Number of Iterations');
legend("Jacobi Iterations", "Gauss-Seidel Iterations");
```

名称

GS_
J_er
N
alph
beta
itera
nk

Figure 1

命令行窗口

```
>> hw7
>> hw7
```

正忙

缩放: 100%