附录：

```
format short e

a=0;b=pi;c=0;d=1;

N =input('请输入剖分数：');

h1 = (b-a)/N;

h2 = (d-c)/N;

n = N +1 ;

x = linspace(a,b,n);

y = linspace(c,d,n);

%～～～～～～～～～～～～～～～～精确解～～～～～～～～～～～～～～～～%

ue = zeros(n-2,n-2);

for i = 1 : n-2

    for j =1 : n-2

        ue(i,j) = 1/(9+pi^2)*cos(3*x(i+1))*sin(pi*y(j+1));

    end

end

%矩阵变向量

UE = reshape(ue',[],1);

%～～～～～～～～～～～～～～～～数值解～～～～～～～～～～～～～～～～%

%右端项

f = zeros(n-2,n-2);

for j = 1:n-2

    for i =1:n-2

        f(i,j) = cos(3*x(i+1))*sin(pi*y(j+1));

    end

end
```

```
F = reshape(f',[],1); %矩阵变向量


%创建系数矩阵

h12 = 1/h1^2;

h22 = 1/h2^2;

E = eye(n-2);%单位矩阵

B = (h12+h22)*E - h12*diag(ones(1,n-3), 1)...

      - h12*diag(ones(1,n-3),-1);

C = (h12+h22)*E - h22*diag(ones(1,n-3), 1)...

      - h22*diag(ones(1,n-3),-1);

%考虑边界条件

B(1,1) = 1/2*h12 + h22;

B(n-2,n-2) = 1/2*h12 + h22;

%获得系数矩阵

A = kron(B,E)+kron(E,C);


%求解

U = A\F;

e = abs(UE - U);

u = reshape(U,n-2,n-2)';

norm = norm(e);%L2 范数

max = max(e);%无穷范数
```