
```

a = toeplitz([2 -1 0 0 0 0 0 0 0]);
b = kron(a, eye(9))+kron(eye(9),a);
    %9x9 matrix
h=0.1;
b=b/h^2;
i=1;
f=zeros(9*9,1);
for y = 1:9
    for x = 1:9
        f(i)=sin(0.1*pi*x)*sin(0.1*pi*y)+sin(0.1*pi*x)*sin(0.1*2*pi*y);
        i=i+1;
    end
end

%note that on the boundary, f vanishes
x=b\f;
numericso11 = x(41);
analyticso1 = 1/(2*pi^2);
error1=abs(numericso11-analyticso1)

error1 =

    4.1873e-04


a = toeplitz([2 -1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0]);
b = kron(a, eye(19))+kron(eye(19),a);
    %19x19 matrix
h=0.05;
b=b/h^2;
i=1;
f=zeros(19*19,1);
for y = 1:19
    for x = 1:19
        f(i)=sin(0.05*pi*x)*sin(0.05*pi*y)+sin(0.05*pi*x)*sin(0.05*2*pi*y);
        i=i+1;
    end
end

%note that on the boundary, f vanishes
x=b\f;
numericso12 = x(181);
analyticso1 = 1/(2*pi^2);
error2=abs(numericso12-analyticso1)

error2 =

    1.0430e-04

```
