```
from numpy import arctan,cos,linspace,zeros,pi,transpose,exp
from pylab import plot,imshow
import matplotlib.pyplot as plt
import math as mt
def simpson(a,b,n,y1):
 h=(b-a)/n
 x=linspace(a,b,n+1)
 y=1/(x**2+y1**2)
 k_1=0
 k_2=0
 if n%2==0:
   n1,n2=n,n-1
 else:
   n1,n2=n-1,n
 for i in range(1,n1,2):
   k_1=y[i]+k_1
 for i in range(2,n2,2):
   k_2=y[i]+k_2
 I=(y[0]+y[n]+4*k_1+2*k_2)*h/3
 return(I)
n=10
epsilon=8.85418781e-12
x1=linspace(-10,10,n+1)
x2=linspace(-10,10,n+1)

k_1=0
A=zeros([len(x1),len(x2)],dtype=float,order='c')
for i in range(0,len(x1)):
  k_2=0
  for j in range(0,len(x2)):
    if x2[j]>=0:
      A[k_2,k_1]=(5/(4*pi*epsilon))*simpson(-2,2,n,x2[j])*cos(arctan(x1[i]/abs(x2[j])))
      k_2=k_2+1
    elif x2[j]<0:
      A[k_2,k_1]=(5/(4*pi*epsilon))*simpson(-2,2,n,x2[j])*cos(arctan(x1[i]/abs(x2[j])))
      k_2=k_2+1
  k_1=k_1+1

imshow(A,cmap='jet',origin='lower')
plt.colorbar()
```

```
/usr/local/lib/python3.6/dist-packages/ipykernel_launcher.py:9: RuntimeWarning: divide b
  if __name__ == '__main__':
/usr/local/lib/python3.6/dist-packages/ipykernel_launcher.py:33: RuntimeWarning: divide
/usr/local/lib/python3.6/dist-packages/ipykernel_launcher.py:33: RuntimeWarning: invalid
<matplotlib.colorbar.Colorbar at 0x7f346d39cc88>
```