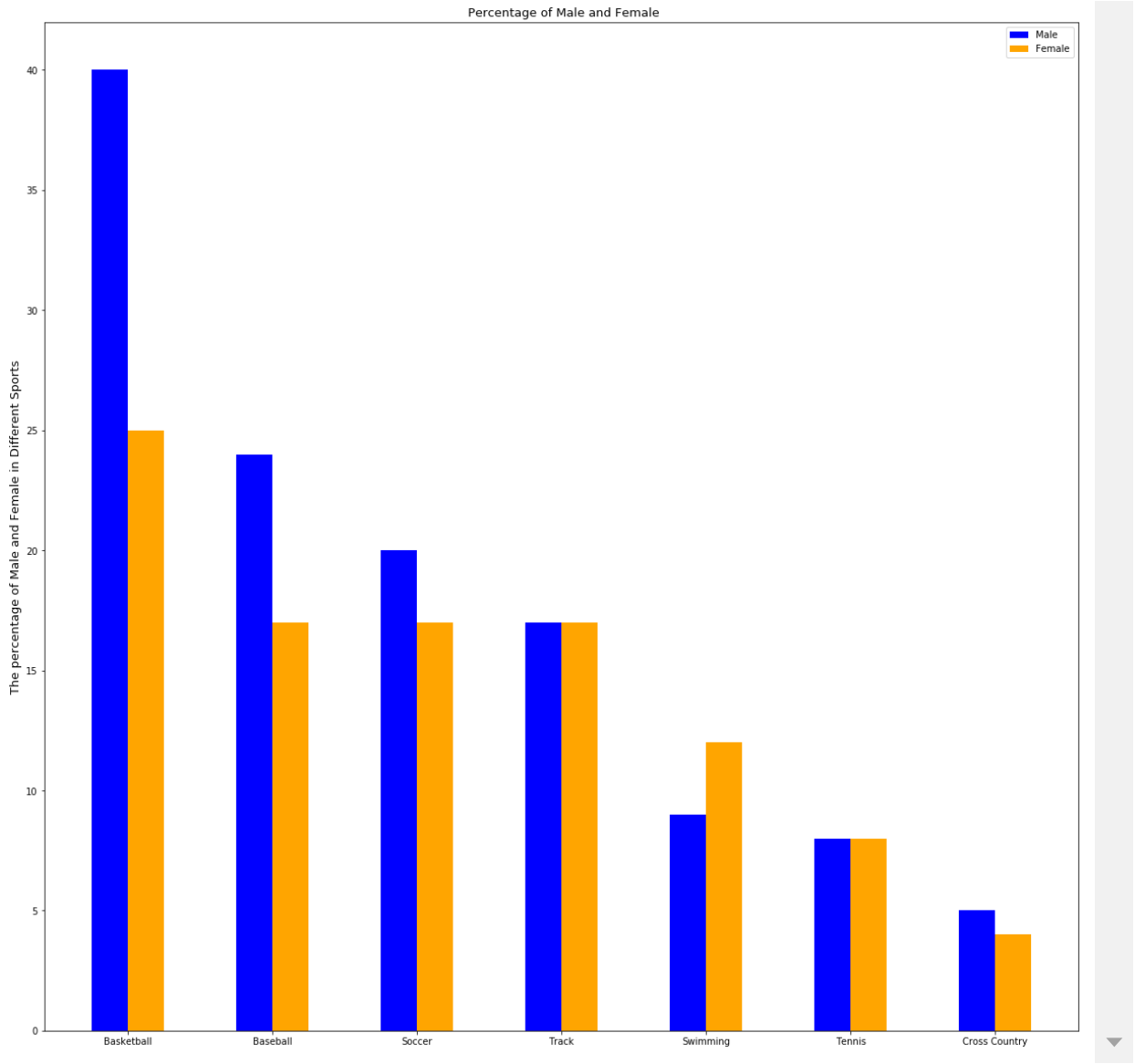
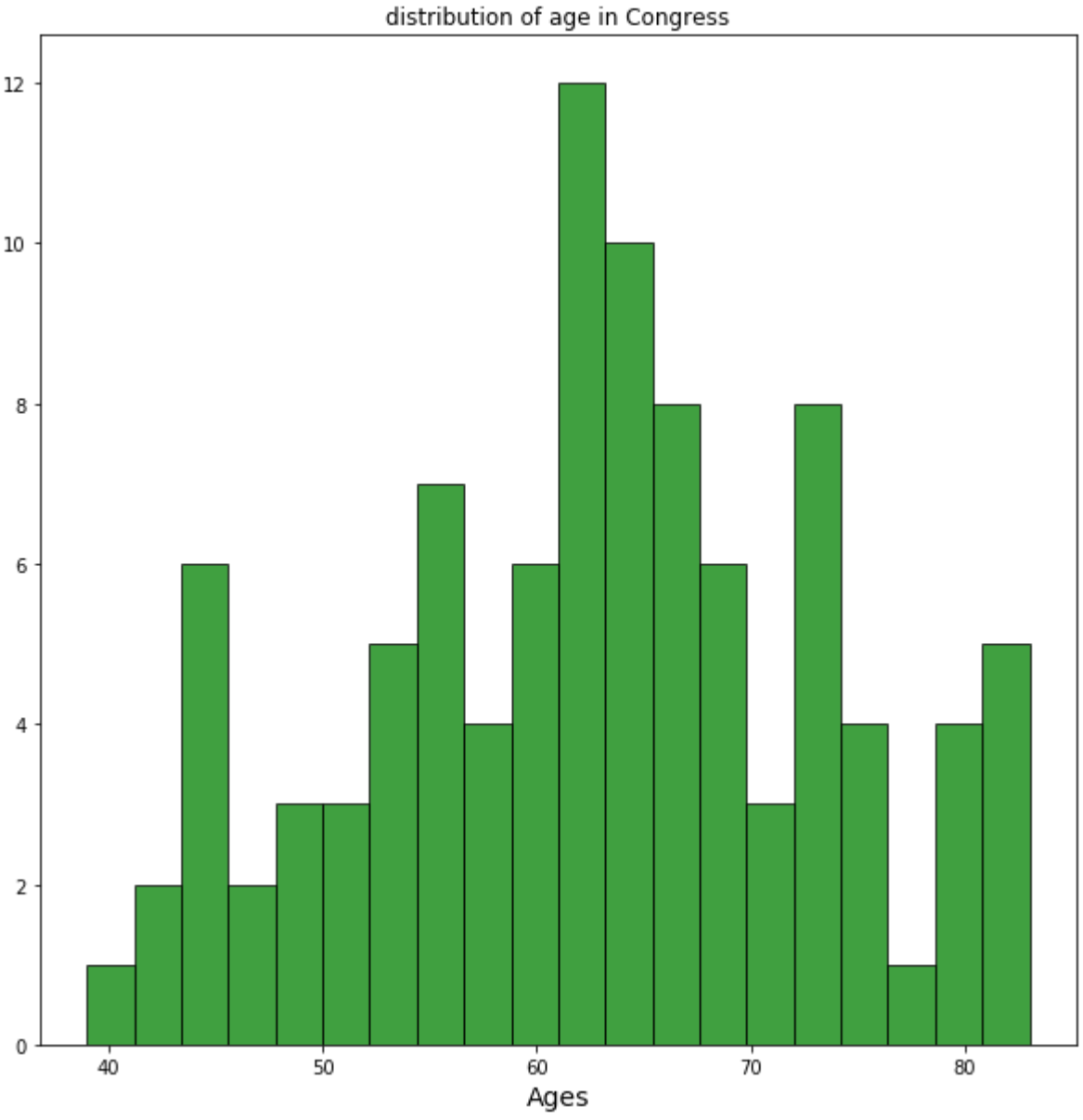
Thasina Tabashum Question 1

In [16]:
```
import numpy as np
import matplotlib.pyplot as plt


male = (40, 24, 20, 17,9,8,5)
ind = np.arange(7)  # the x locations for the groups
width = 0.25       # the width of the bars
fig, ax = plt.subplots(figsize=(20,20))

#Creating the first set of bars for the first set of data
rects1 = ax.bar(ind, male , width, color='blue')

#Second set of data-- creation of bars
female = (25, 17, 17, 17,12,8,4)
rects2 = ax.bar(ind + width, female, width, color='orange')

# Add some text for labels, title and axes ticks
ax.set_ylabel('The percentage of Male and Female in Different Sports',fontsize=1
ax.set_title(' Percentage of Male and Female',fontsize=13)
ax.set_xticks(ind + width / 2)
ax.set_xticklabels(('Basketball', 'Baseball', 'Soccer', 'Track','Swimming','Tenn
plt.savefig("GroupedBar",bbox_inches='tight')
#Create a legend
ax.legend((rects1[0], rects2[0]), ('Male', 'Female'))

plt.show()
```


Percentage of Male and Female
Male
Female
The percentage of Male and Female in Different Sports
0
5
10
15
20
25
30
35
40
Basketball
Baseball
Soccer
Track
Swimming
Tennis
Cross Country

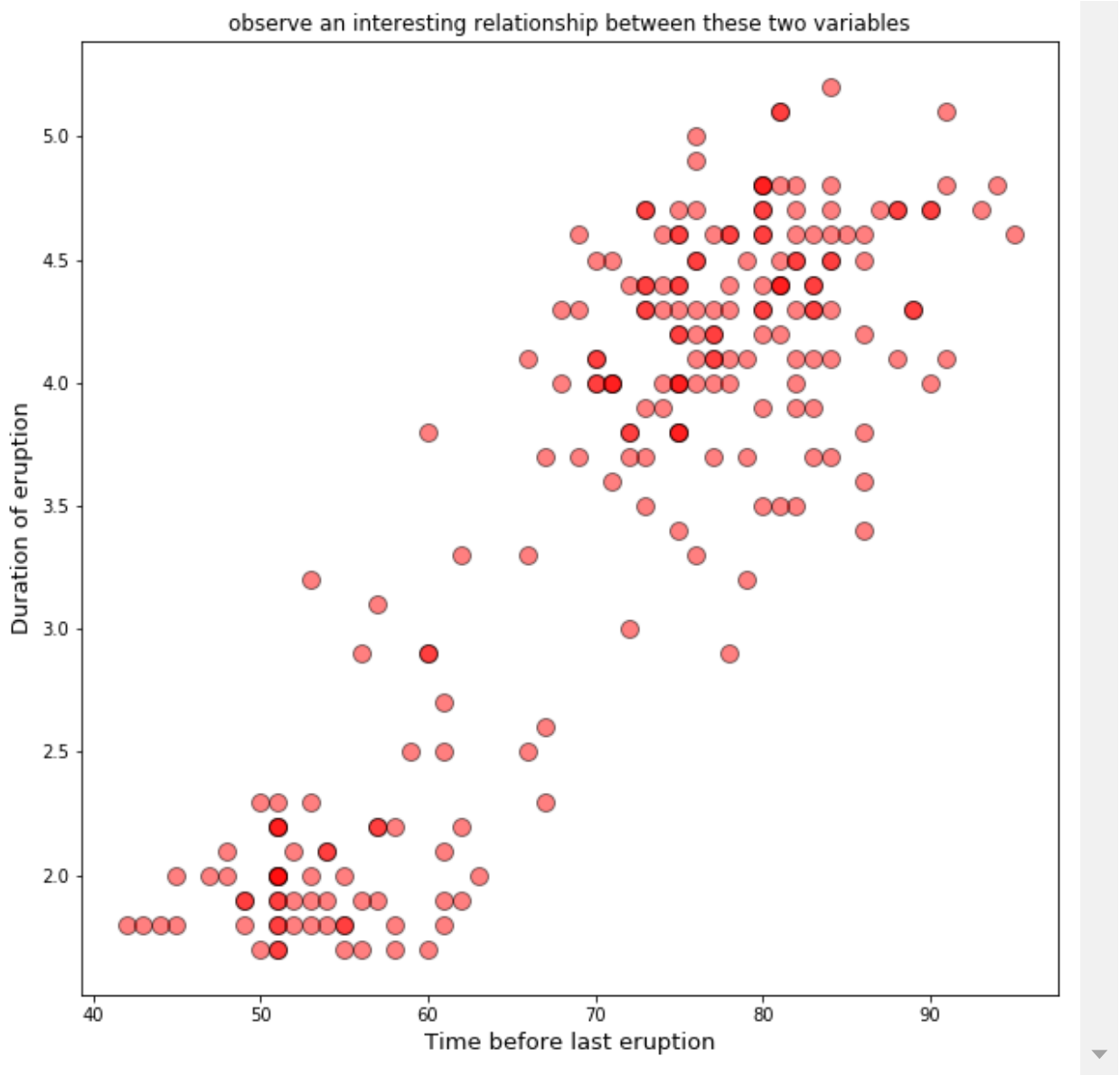
Question 2

In [68]:
```
x = [83, 83, 82, 82, 82, 80, 80, 80, 79, 77, 76, 76, 76, 75, 74, 74, 73, 73, 73,
     70, 69, 69, 69, 69, 69, 68, 67, 67, 67, 66, 66, 66, 66, 66, 65, 65, 65, 65,
     63, 63, 62, 62, 62, 61, 61, 61, 61, 61, 61, 61, 60, 60, 60, 59, 59, 59, 58,
     55, 54, 54, 53, 53, 53, 52, 52, 51, 49, 48, 48, 47, 46, 45, 45, 45, 45, 44,
num_bins =20
plt.figure(figsize=(10,10))
n, bins, patches = plt.hist(x, num_bins, facecolor='green', alpha=0.75, edgecolo

plt.title('distribution of age in Congress')
plt.xlabel('Ages',fontsize=14)
plt.ylabel('',fontsize=14)
plt.savefig("D:\Courses\BigData\histogramMid.pdf",bbox_inches='tight')
plt.savefig("histogramMid.pdf",bbox_inches='tight')
plt.show()
```



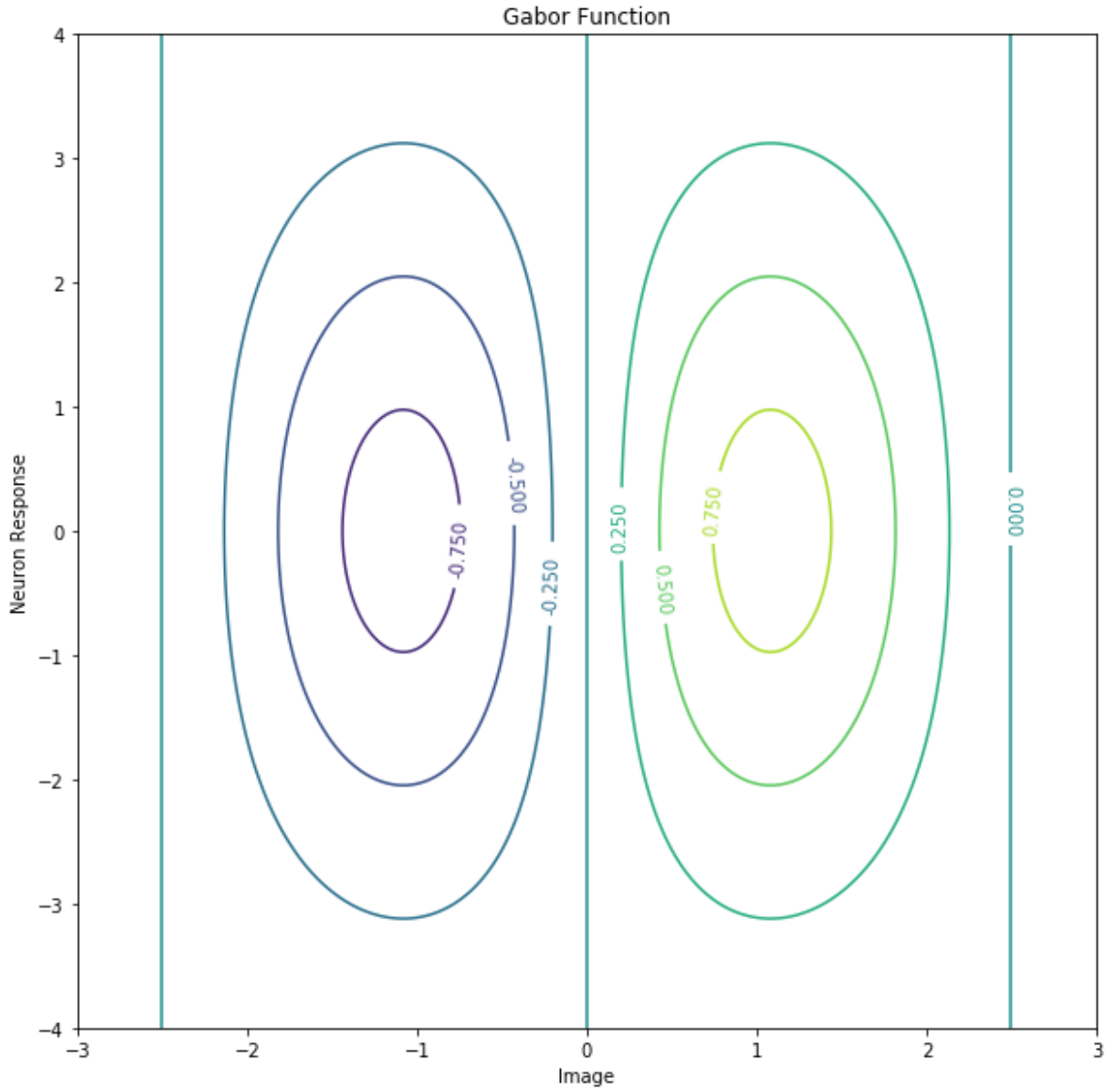
Question 3

In [35]:
```
#Varying y-values and x-values
x = [ 78, 74, 68, 76, 80, 84, 50, 93, 55, 76, 58, 74, 75, 80, 56, 80, 69, 57, 90,
     51, 79, 53, 82, 51, 76, 82, 84, 53, 86, 51, 85, 45, 88, 51, 80, 49, 82, 75,
     68, 86, 72, 75, 75, 66, 84, 70, 79, 60, 86, 71, 67, 81, 76, 83, 76, 55, 73,
     57, 71, 72, 77, 55, 75, 73, 70, 83, 50, 95, 51, 82, 54, 83, 51, 80, 78, 81,
     78, 61, 73, 75, 73, 76, 55, 86, 48, 77, 73, 70, 88, 75, 83, 61, 78, 61, 81,
     80, 76, 56, 82, 47, 76, 61, 75, 72, 74, 69, 78, 52, 91, 66, 71, 75, 81, 77,
     82, 62, 73, 84, 58, 82, 77, 75, 77, 77, 53, 75, 78, 51, 81, 52, 76, 73, 84,
     81, 49, 87, 43, 94, 45, 81, 59, 82, 80, 54, 75, 73, 57, 80, 51, 77, 66, 77,
     69, 84, 58, 90, 82, 71, 80, 51, 80, 62, 84, 51, 81, 83, 84, 72, 54, 75, 74,
     70, 60, 86, 78, 51, 83, 76, 51, 90, 71, 49, 88, 52, 79, 61, 81, 48, 84, 63]


y= [4.4, 3.9, 4, 4, 3.5, 4.1, 2.3, 4.7, 1.7,
    4.9, 1.7, 4.6, 3.4, 4.3, 1.7, 3.9, 3.7, 3.1, 4, 1.8, 4.1, 1.8, 3.2, 1.9, 4.6,
    2.3, 3.8, 1.9, 4.6, 1.8, 4.7, 1.8, 4.6, 1.9, 3.5, 4, 3.7, 3.7, 4.3, 3.6, 3.8,
    4.1, 3.7, 3.8, 3.4, 4, 2.3, 4.4, 4.1, 4.3, 3.3, 2, 4.3, 2.9, 4.6, 1.9, 3.6,
    4, 3.7, 1.7, 4.6, 1.7, 4, 1.8, 4.4, 1.9, 4.6, 2.9, 3.5, 2, 4.3, 1.8, 4.1,
    4.5, 2, 4.2, 4.4, 4.1, 4.1, 4, 4.1, 2.7, 4.6, 1.9, 4.5, 2, 4.8, 4.1, 4.1,
    4.3, 4.4, 4.4, 4.3, 4.6, 2.1, 4.8, 4.1, 4, 4, 4.4, 4.1, 4.3, 4, 3.9, 3.2,
    3.8, 4, 4.1, 1.8, 4.4, 4, 2.2, 5.1, 1.9, 5, 4.4, 4.5, 3.8, 4.3, 4.4, 2.2,
    4.3, 4.4, 1.9, 4.7, 4.3, 2.2, 4.7, 2.3, 4.6, 3.3, 4.2, 2.9, 4.6, 3.3, 4.2,
    2, 4.8, 1.9, 4.7, 2, 5.1, 4.3, 4.8, 3, 2.1, 4.6, 4, 2.2, 5.1, 2.9, 4.3, 2.1,
    2.2, 4.7, 4, 1.8, 4.7, 1.8, 4.5, 2.1, 4.2, 2.1, 5.2, 2
]

fig, ax = plt.subplots(figsize=(10,10))
ax.set_xlabel('Time before last eruption',fontsize=13)
ax.set_ylabel('Duration of eruption',fontsize=13)
#Plotting the two different lines
plt.scatter(x, y, s=100, facecolors ='r', edgecolors='black', alpha=0.5)
#plt.plot(x,y,color='r')
#Putting a title and labels
plt.title("observe an interesting relationship between these two variables")

plt.show()
```


observe an interesting relationship between these two variables
Duration of eruption
Time before last eruption
5.0
4.5
4.0
3.5
3.0
2.5
2.0
40
50
60
70
80
90

Question 4

In [64]:
```
#Creates an unfilled contour with a cool & warm color mapping
import matplotlib.mlab as mlab
#Following line is for color mapping
from matplotlib import cm
#Creating the data for the contour plot(s)
delta = 0.015
x = np.arange(-5.0,5.0,delta)
y = np.arange(-5.0,5.0,delta)
#meshgrid makes rectangular arrays that
#cover every combination of x and y values
X, Y = np.meshgrid(x,y)

Z = np.exp(-0.5 * (X**2/4 + Y**2/4)) * np.sin(2 * np.pi * 0.2 * X)



#Creating an unfilled contour plot
plt.figure(figsize=(10,10))
plt.ylim(-4,4)
plt.xlim(-3,3)
#Can change the color mappings and line style
cp = plt.contour(X, Y, Z)

#Labels and titles for the plot
plt.clabel(cp, inline=True, fontsize=10)
plt.title('Gabor Function')
plt.xlabel('Image')
plt.ylabel('Neuron Response')
plt.show()
```


Gabor Function
Neuron Response
Image
-0.750
-0.500
-0.250
0.250
0.500
0.750
0.000