```
import matplotlib
import numpy as np
import matplotlib.cm as cm

import matplotlib.pyplot as plt
import math
def check_val(x):
    if np.abs(x) > 1:
        y=1
    else:
        y=x
    return y

matplotlib.rcParams['xtick.direction'] = 'out'
matplotlib.rcParams['ytick.direction'] = 'out'

ra = 14.260833
dec = 0.3347960384
lat1 = 0.7853981634
alt = 30 * math.pi /180


c=math.pi /180

delta = 0.05
hr = np.arange(18, 19.1, 0.1)
lat = np.arange(40, 51, 1)
X, Y = np.meshgrid(hr, lat)
Z=(np.arcsin(np.sin(dec)*np.sin(Y*c)+np.cos(dec)*np.cos(Y*c)*np.cos(((X-ra))*15*c)))/c


V=[]
for x in range(20, 38):
    for y in range(0, 6):
        z=x+y/6
        V.append(z)


fig=plt.figure(figsize = (8, 14))
ax = fig.add_subplot(1,1,1)
plt.xlabel("Local Sidereal Time")
plt.ylabel("Latitude")

major_ticks = np.arange(40, 50, 1)
minor_ticks = np.arange(40, 50, 0.1)
major_x=np.arange(18, 19.1, 0.1)
minor_x=np.arange(18, 19.1, 0.01)
ax.set_xticks(major_x)
ax.set_xticks(minor_x, minor=True)
ax.set_yticks(major_ticks)
ax.set_yticks(minor_ticks, minor=True)

# and a corresponding grid

#ax.grid(which='both')
CS = plt.contour(X, Y, Z, V,colors='b', alpha=0.4, orientation="portrait")
plt.clabel(CS, CS.levels[::6],inline=1, fontsize=5)
ra = 16.5
dec =-0.4616395872
hr = np.arange(18, 19.1, 0.1)
lat = np.arange(40, 51, 1)
X, Y = np.meshgrid(hr, lat)
Z=(np.arcsin(np.sin(dec)*np.sin(Y*c)+np.cos(dec)*np.cos(Y*c)*np.cos(((X-ra))*15*c)))/c

V=[]
for x in range(6, 21):
    for y in range(0, 6):
        z=x+y/6
        V.append(z)


CT = plt.contour(X, Y, Z, V, colors='r', alpha=0.6, orientation="portrait")
plt.clabel(CT,CT.levels[::6],  inline=1, fontsize=5)
plt.title('Arcturus(blue) and Antares(red)')
plt.savefig('contour.pdf')
plt.show()
```