Octave code for Complex Function Plots

```
clc;
% Specify Input range  (Comment out the other unused x-y ranges)
x = -4:0.25:4;      # change plot increment to 0.1 for f(z) = z + 1/z
y = -4:0.25:4;

% Create meshgrid (data points) for complex (x-y) plane
% 'xx' matrix has 'x' as rows, 'yy' has 'y' as columns

[xx,yy] = meshgrid(x,y);

%  Claculate function values
z = xx + i*yy;      # Input data for complex plane
fz = z.*z - 4;      # Generate and display plot values for f(z) = z^2 - 4
%fz = z.*z + 4;      # Generate and display plot values for f(z) = z^2 + 4
%fz = exp(z);        #  Look at the real part!!!
%fz = z + 1./z       # Joukowsky function

% Plot the 'magnitude' function values
figure(1);
surfc(x,y,abs(fz));      # Plot the function values
axis([-4,4,-4,4,0,10]);
colormap jet;
xlabel('x axis');
ylabel('y axis');
title ("Plot of Magnitude", 'fontsize', 16);


% Plot the 'real part' of function values
figure(2);
surfc(x,y,real(fz));    #  Plot the Function values
axis([-4,4,-4,4,-10,10]);
colormap jet;
xlabel('x axis');
ylabel('y axis');
title ("Plot of Real part", 'fontsize', 16);

%  Try plots for functions (z^2+4),(1/z), (z+1/z), z^2, exp(z) and sin(z)
```

<u>Octave Code for Plotting "sin(x)/x" – Sombrero function!!</u>

```
tx = linspace(-8,8,41)
ty = -8:0.4:8         # produces the same values
[xx,yy] = meshgrid(tx,ty)
r = sqrt(xx.^2 + yy.^2)+ eps   # 'eps' avoids sin(0)/0 !!!
tz = sin(r) ./ r
surfc(tx,ty,tz);
```