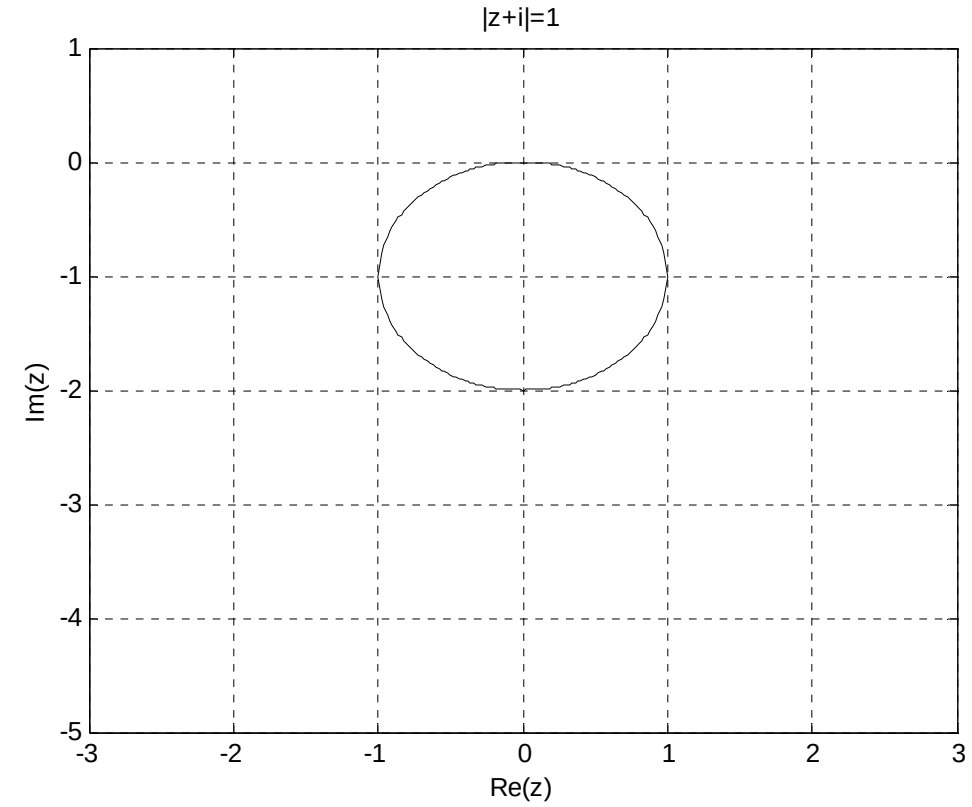
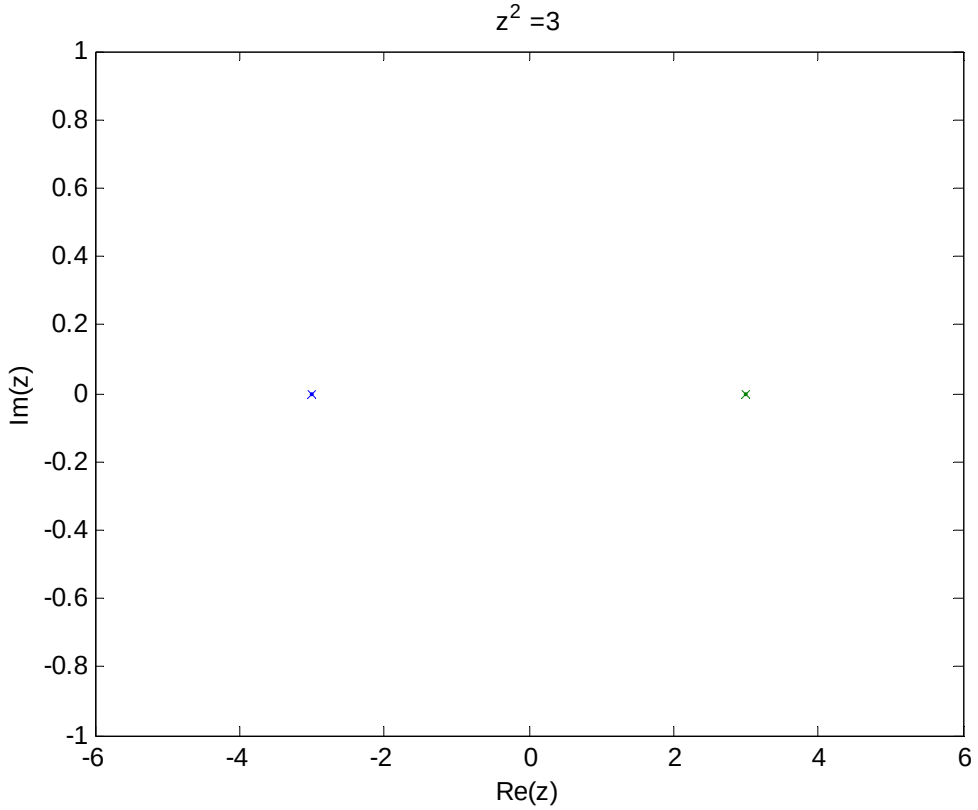
```
%MATH 206 HW#2
%Part1 (a)
x=(((1:101)-1)/50)-1;
y1=-1+sqrt(1-x.^2);
y2=-1-sqrt(1-x.^2);
plot(x,y1,'-k',x,y2,'-k')
title('|z+i|=1')
xlabel('Re(z)');ylabel('Im(z)')
axis([-3 3 -5 1]); grid on;

%Part1 (b)
figure
plot(-3,0,'-X',3,0,'-X');
xlabel('Re(z)');ylabel('Im(z)'); grid on
axis([-6 6 -1 1]); title('z^2 =3')

%Part2 (a)-(b)-(c)
disp('>Part2:')
a1=angle(-2/(1+j*sqrt(3)));
a2=angle(j/(-2-2*j));
a3=angle((sqrt(3)-j)^6);
str1=['(a) principal arg.=',num2str(a1)];
disp(str1);
str2=['(b) principal arg.=',num2str(a2)];
disp(str2);
str3=['(c) principal arg.=',num2str(a3)];
disp(str3);

%Part3
disp('>Part3');
disp('Roots:')
solve('z^3-z^2+2')

%Part3 alternative
p=[1,-1,0,2];
roots(p)

% This function calculates the roots of a complex number z
% Save as find_root.m
% Inputs: z= any complex number
%         n= root order
function res=find_root(z,n)
res=zeros(n,1);
for ii=1:n
    res(ii)=((abs(z))^(1/n))*exp(j*((angle(z))/n+2*(ii-1)*pi/n));
end
return
```

FIGURES:


|z+i|=1
1
0
-1
-2
-3
-4
-5
Im(z)
-3
-2
-1
0
1
2
3
Re(z)


z^2 =3
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
Im(z)
-6
-4
-2
0
2
4
6
Re(z)

MATLAB command line outputs:

```
>Part2:
(a) principal arg.=2.0944
(b) principal arg.=-2.3562
(c) principal arg.=3.1416
>Part3
Roots:

[  -1]
[ 1+i]
[ 1-i]
```