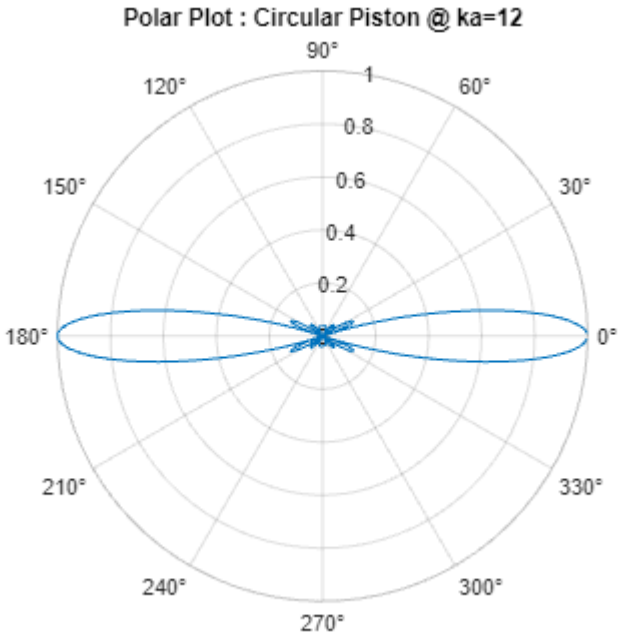
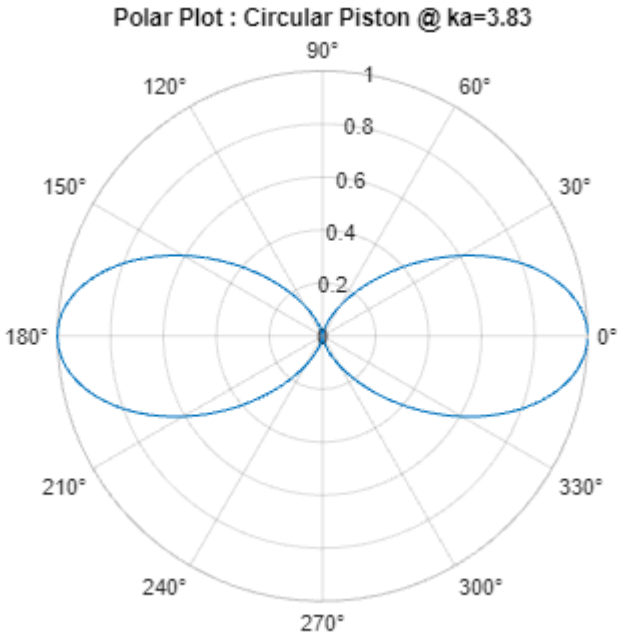
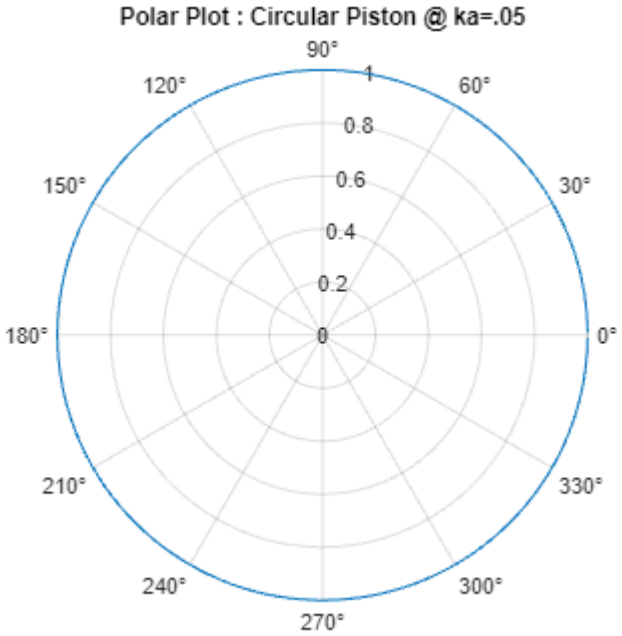
```
%question 3
ka=[12, 3.83, .05];
X1=ka(1).*sin(theta);
Hcp1=abs(2*besselj(1,X1)./X1);

X2=ka(2).*sin(theta);
Hcp2=abs(2*besselj(1,X2)./X2);

X3=ka(3).*sin(theta);
Hcp3=abs(2*besselj(1,X3)./X3);

figure
polarplot(theta,Hcp1)
title('Polar Plot : Circular Piston @ ka=12')
```



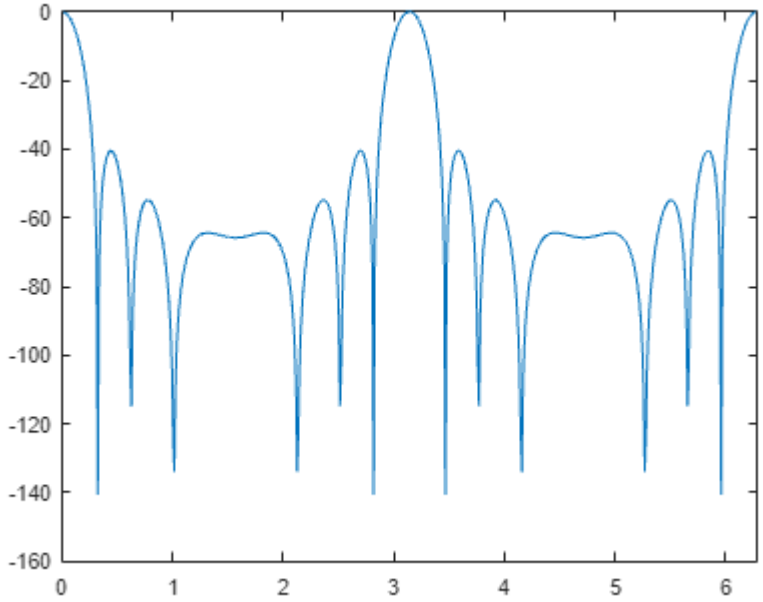

```
figure
polarplot(theta,Hcp2)
title('Polar Plot : Circular Piston @ ka=3.83')
```



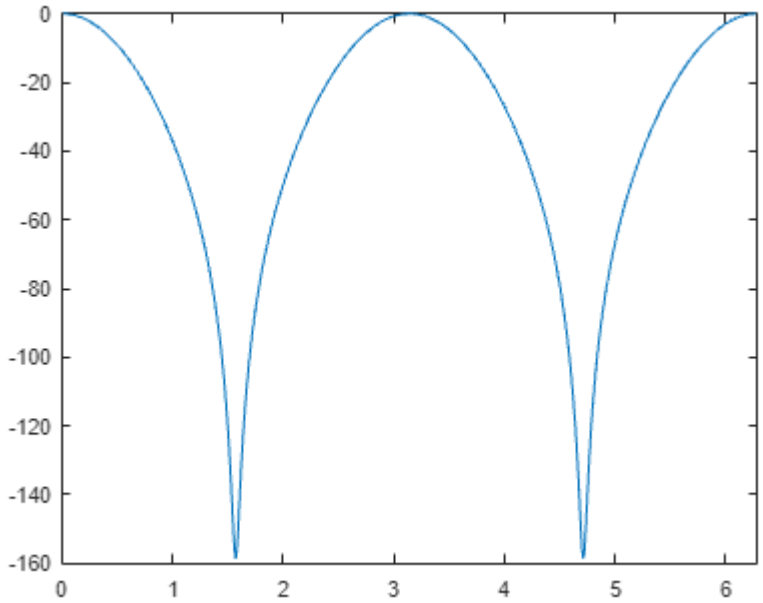

```
figure
polarplot(theta,Hcp3)
title('Polar Plot : Circular Piston @ ka=.05')
```



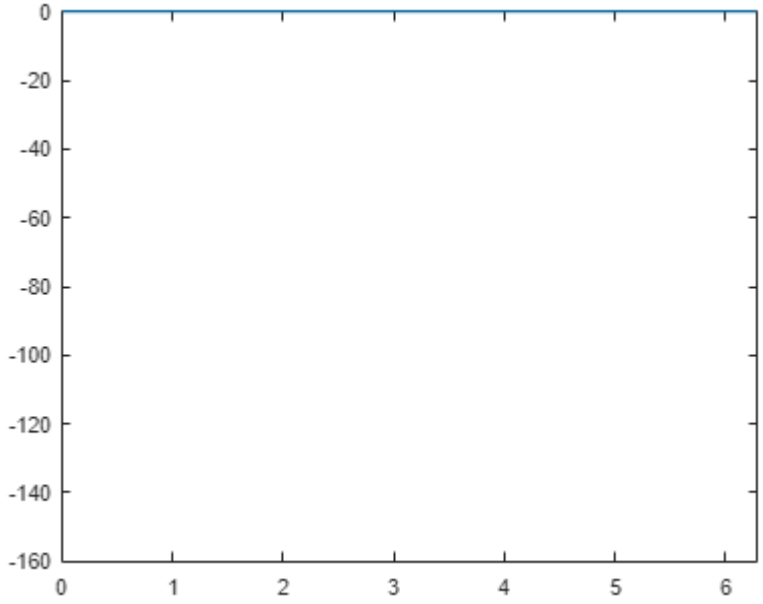

```
%question 4
figure
plot(theta,20*log(Hcp1))
xlim([0 2*pi])
ylim([-160 0])
```




```
figure
plot(theta,20*log(Hcp2))
xlim([0 2*pi])
ylim([-160 0])
```




```
figure
plot(theta,20*log(Hcp3))
xlim([0 2*pi])
ylim([-160 0])
```


0
-20
-40
-60
-80
-100
-120
-140
-160
0
1
2
3
4
5
6