
Table of Contents

Ejercicio 1	1
Ejercicio 2	1
Ejercicio 3	1
Ejercicio 4	2
Ejercicio 5	3
Ejercicio 6	3
Ejercicio 7	4
Ejercicio 8	5
Ejercicio 9	6
Ejercicio 10	7
Ejercicio 11	8
Ejercicio 12	8
Ejercicio 13	9
Ejercicio 14	10
Ejercicio 15	12

Ejercicio 1

```
x=[10;20;40;60;80];  
y=[x, log(x)];  
  
fprintf('\n Número Natural \t log\n')  
fprintf('\t%4i\t\t%8.5f\n',y')
```

	<i>Número Natural</i>	<i>log</i>
	10	2.30259
	20	2.99573
	40	3.68888
	60	4.09434
	80	4.38203

Ejercicio 2

```
A=[4 -2 -10;2 10 -12;-4 -6 16];  
B=[-10 32 -16]';  
x=A\B
```

```
x =  
  
2.0000  
4.0000  
1.0000
```

Ejercicio 3

```
%Factorización:
```

```

A=[4 -2 -10;2 10 -12;-4 -6 16];
b=[-10 32 -16]';
[L U]=lu(A)
C=L*U
%Resolución:
X=inv(U)*inv(L)*b

```

L =

```

    1.0000    0    0
    0.5000    1.0000    0
   -1.0000   -0.7273    1.0000

```

U =

```

    4.0000   -2.0000  -10.0000
         0   11.0000   -7.0000
         0         0    0.9091

```

C =

```

    4    -2   -10
    2    10   -12
   -4    -6    16

```

X =

```

    2
    4
    1

```

Ejercicio 4

```

A=[0 1 -1;-6 -11 6;-6 -11 5];
[X,D]=eig(A);
fprintf('\n Autovectores (Columnas de la matriz)\n')
X(:,1)
fprintf('\n Autovalores (Diagonal)\n')
D

```

Autovectores (Columnas de la matriz)

ans =

```

    0.7071
    0.0000
    0.7071

```

Autovalores (Diagonal)

D =

```
-1.0000      0      0
      0 -2.0000      0
      0      0 -3.0000
```

Ejercicio 5

```
Y=[1.5-2j -.35+1.2j;-.35+1.2j 0.9-1.6j];
I=[30+40j;20+15j]
V=Y\I
S=V.*conj(I)
```

I =

```
30.0000 +40.0000i
20.0000 +15.0000i
```

V =

```
3.5902 +35.0928i
6.0155 +36.2212i
```

S =

```
1.0e+003 *
1.5114 + 0.9092i
0.6636 + 0.6342i
```

Ejercicio 6

```
% function hanoi(n,i,a,f)
% if n>0
%     hanoi(n-1, i, f, a);
%     fprintf('mover disco (número) de (letra1) a (letra2)', n, i, f);
%     hanoi(n-1, a, i, f);
% end
hanoi (5, 'a', 'b', 'c')

mover disco 1 de a a c
mover disco 2 de a a b
mover disco 1 de c a b
```

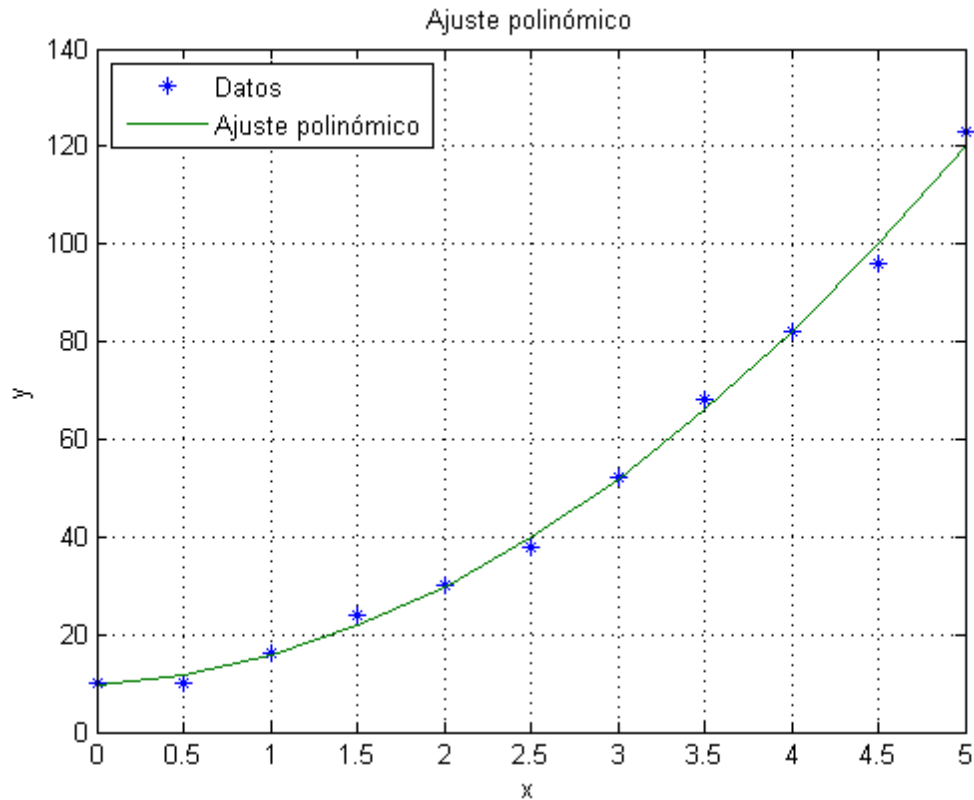
```
mover disco 3 de a a c
mover disco 1 de b a a
mover disco 2 de b a c
mover disco 1 de a a c
mover disco 4 de a a b
mover disco 1 de c a b
mover disco 2 de c a a
mover disco 1 de b a a
mover disco 3 de c a b
mover disco 1 de a a c
mover disco 2 de a a b
mover disco 1 de c a b
mover disco 5 de a a c
mover disco 1 de b a a
mover disco 2 de b a c
mover disco 1 de a a c
mover disco 3 de b a a
mover disco 1 de c a b
mover disco 2 de c a a
mover disco 1 de b a a
mover disco 4 de b a c
mover disco 1 de a a c
mover disco 2 de a a b
mover disco 1 de c a b
mover disco 3 de a a c
mover disco 1 de b a a
mover disco 2 de b a c
mover disco 1 de a a c
```

Ejercicio 7

```
x=0:0.5:5;
y=[10 10 16 24 30 38 52 68 82 96 123];
p=polyfit(x,y,2)
yc=polyval(p,x);
plot(x,y,'*',x,yc);
xlabel('x'),ylabel('y'),grid,title('Ajuste polinómico')
legend('Datos','Ajuste polinómico',2)
```

$p =$

4.0233 2.0107 9.6783



Ejercicio 8

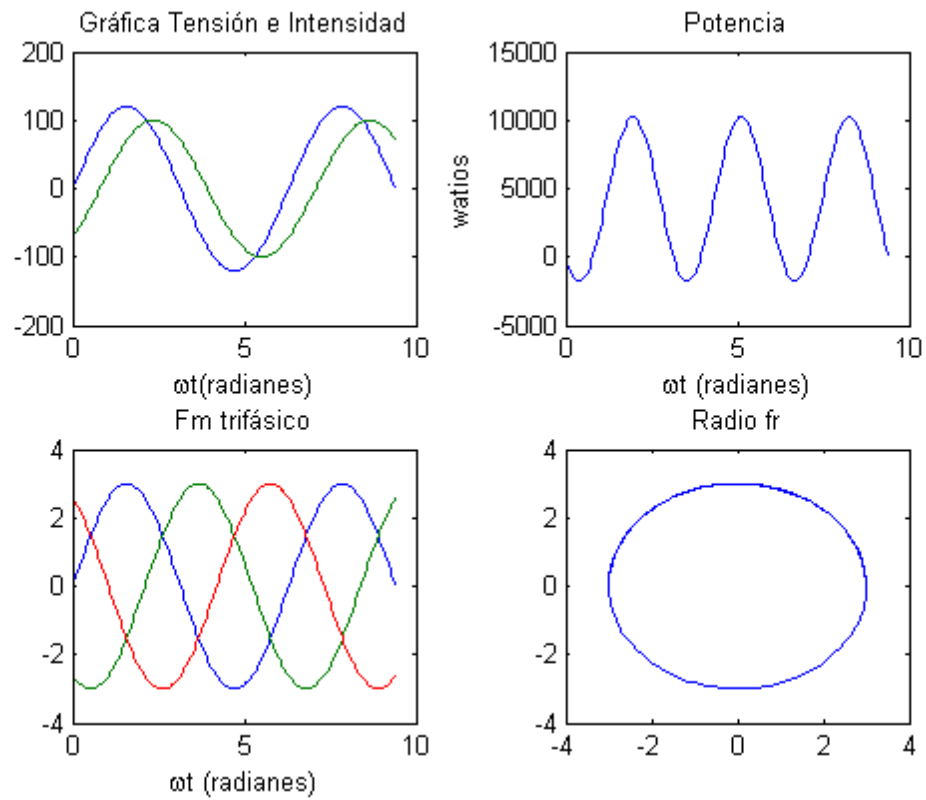
```
omegat=0:0.05:3*pi;  
v=120*sin(omegat);  
i=100*sin(omegat-(pi/4));  
subplot(2,2,1)  
plot(omegat,v,omegat,i)  
title('Gráfica Tensión e Intensidad'),xlabel('\omegat(radianes)')
```

```
p=v.*i;  
subplot(2,2,2)  
plot(omegat,p)  
title('Potencia'),xlabel('\omegat (radianes)'),ylabel('wattios')
```

```
Fm=3.0;  
fa=Fm*sin(omegat);  
fb=Fm*sin(omegat-2*pi/3);  
fc=Fm*sin(omegat-4*pi/3);  
subplot(2,2,3)  
plot(omegat,fa,omegat,fb,omegat,fc)  
title('Fm trifásico'),xlabel('\omegat (radianes)')
```

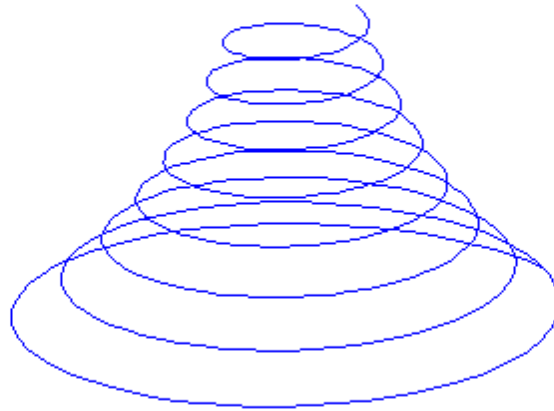
```
subplot(2,2,4)  
fr=3.0;  
plot(-fr*cos(omegat),fr*sin(omegat))
```

```
title('Radio fr')
```



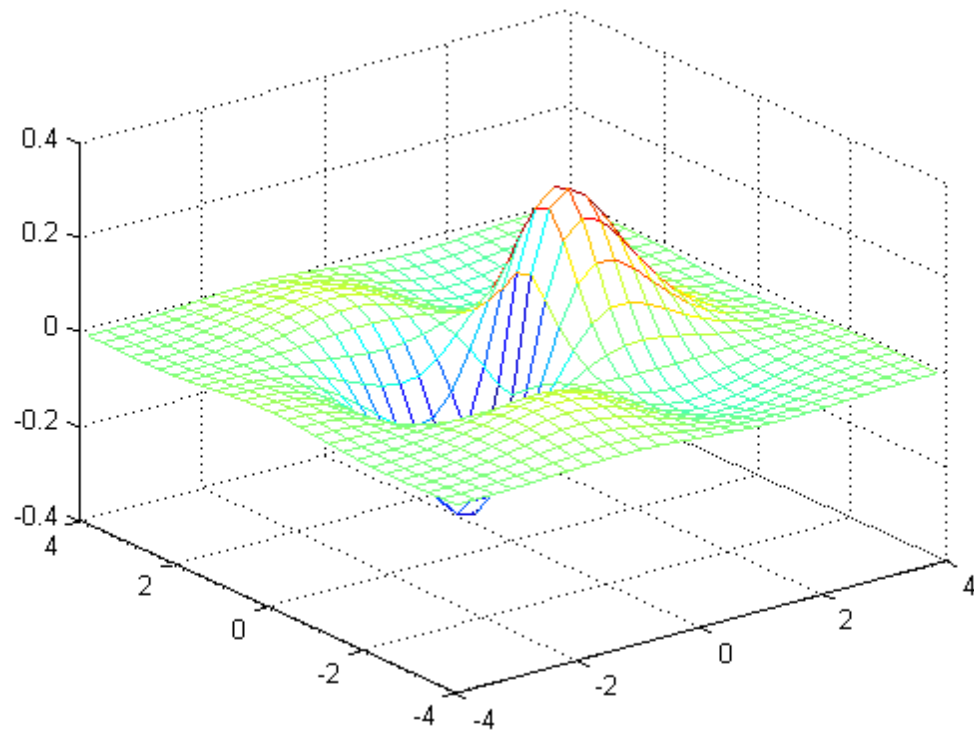
Ejercicio 9

```
t=0:0.1:16*pi;  
X=exp(-0.03*t).*cos(t);  
Y=exp(-0.03*t).*sin(t);  
Z=t;  
subplot(1,1,1)  
plot3(X,Y,Z), axis off
```



Ejercicio 10

```
[x,y]=meshgrid(-4:0.3:4);  
z=sin(x).*cos(y).*exp(-(x.^2+y.^2).^0.5);  
mesh(x,y,z)
```



Ejercicio 11

```
p=[1 0 -35 50 24];
r=roots(p)
```

$r =$

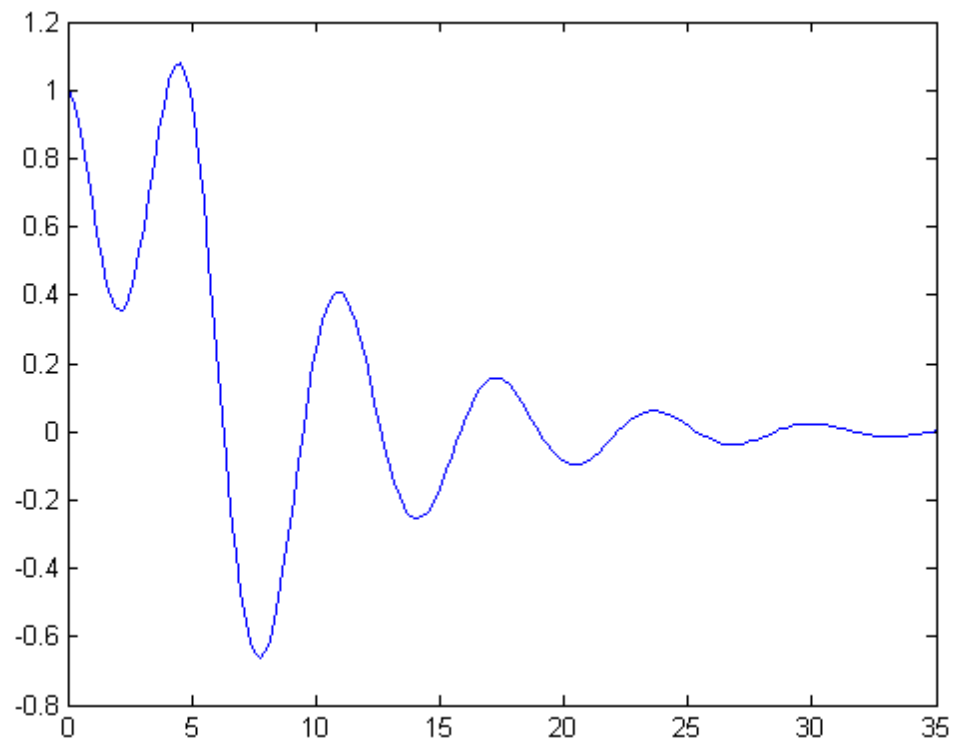
```
-6.4910
 4.8706
 2.0000
-0.3796
```

Ejercicio 12

```
% function y = HalfSine(t, y, z)
% h = sin(pi*t/5).*(t<=5);
% y = [y(2); -2*z*y(2)-y(1)+h];
```

Ejemploode

```
[t, yy] = ode45(@HalfSine, [0 35], [1 0], [], 0.15);
plot(t, yy(:,1))
```

Ejercicio 13

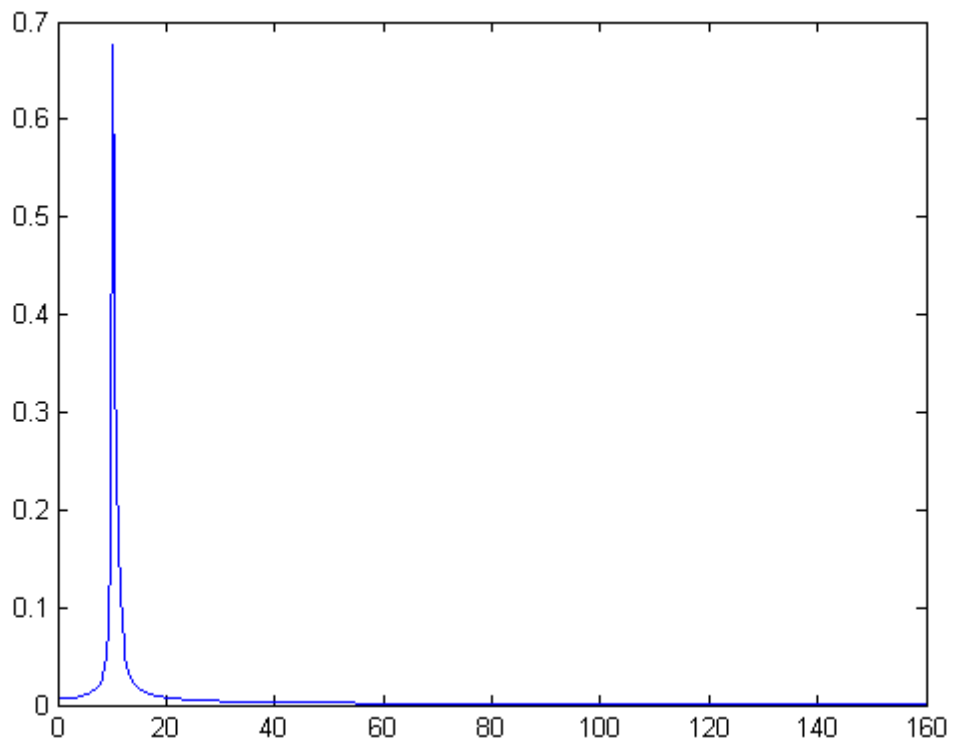
```
k = 5; m = 10; fo = 10; Bo = 2.5; N = 2^m; T = 2^k/fo;  
ts = (0:N-1)*T/N; df = (0:N/2-1)/T;
```

```
g1 = Bo*sin(2*pi*fo*ts)+Bo/2*sin(2*pi*fo*2*ts);  
An1 = abs(fft(g1, N))/N;  
plot(df, 2*An1(1:N/2))
```

```
g2 = exp(-2*ts).*sin(2*pi*fo*ts);  
An2 = abs(fft(g2, N))/N;  
plot(df, 2*An2(1:N/2))
```

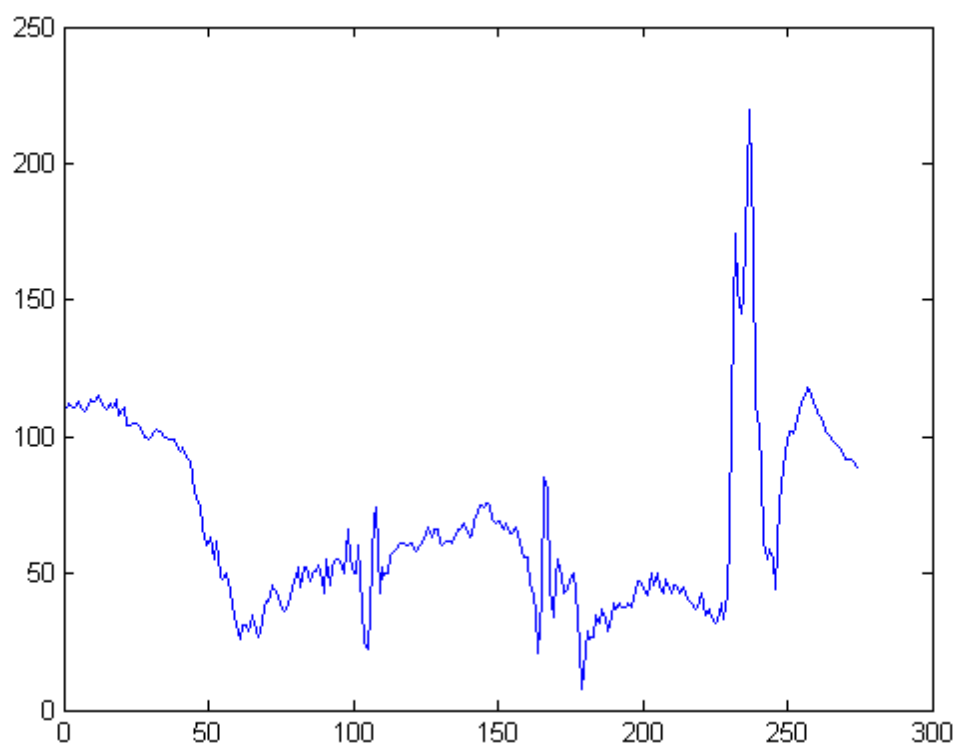
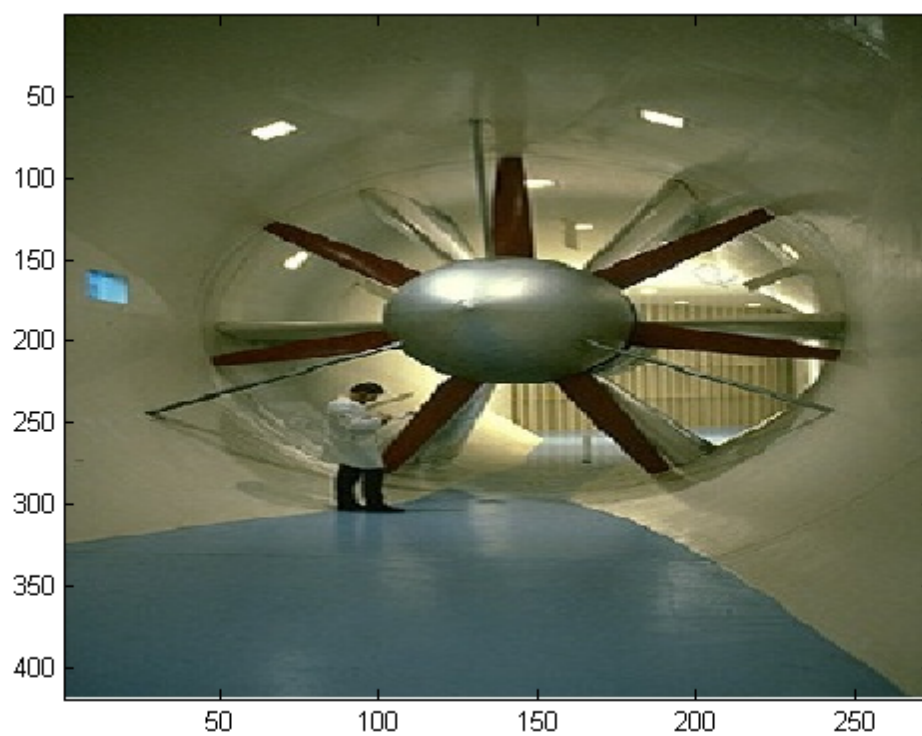
```
g3 = sin(2*pi*fo*ts+5*sin(2*pi*(fo/10)*ts));  
An3 = abs(fft(g3, N))/N;  
plot(df, 2*An3(1:N/2))
```

```
g4 = sin(2*pi*fo*ts-5*exp(-2*ts));  
An4 = abs(fft(g4, N))/N;  
plot(df, 2*An4(1:N/2))
```



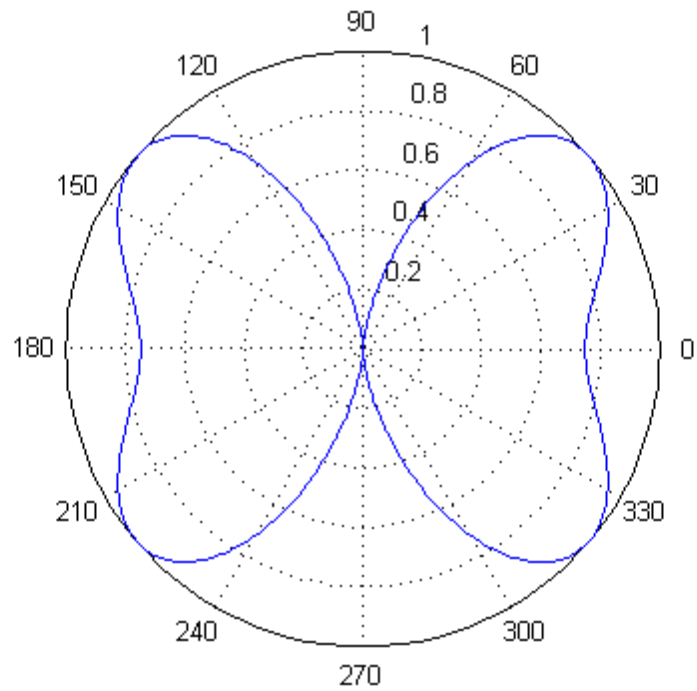
Ejercicio 14

```
subplot(1,1,1)
A = imread('WindTunnel.jpg', 'jpeg');
image(A)
hold on
figure
r= A(200, :, 1);
plot(r, 'b');
```



Ejercicio 15

```
theta = linspace(-pi, pi, 600);  
p = abs(besselj(2, -4*cos(theta)));  
polar(theta, p/max(p))
```



Published with MATLAB® 7.13