Fourier Series with Harmonic Analysis

EXPERIMENT - 8

CODE: -

clc

clear all

syms x

p=input('enter the period of the function f:');

l=p/2;

X=input('enter x-vector in radians');

Y=input('enter y-vector in radians'); %Assumed that f(x)=y

K=length(X);

M=input('enter the number of terms required in FS:');

a\_0=(2/K)\*(sum(Y));

for n=1:M

    a(n)=(2/K)\*sum(Y.\*cos(n\*pi\*X/l));

    b(n)=(2/K)\*sum(Y.\*sin(n\*pi\*X/l));

end

for n=1:M

    F\_S(n)=a(n)\*cos(n\*pi\*x/l)+b(n)\*sin(n\*pi\*x/l);

end

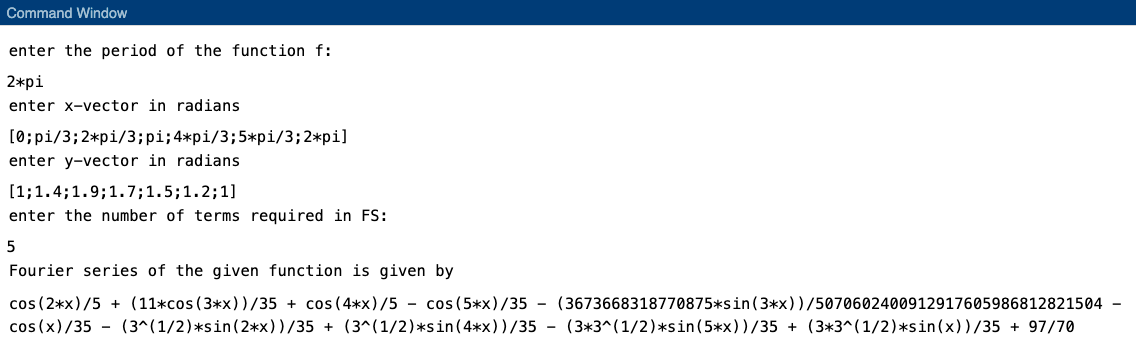
FS=a\_0/2+sum(F\_S);

disp('Fourier series of the given function is given by')

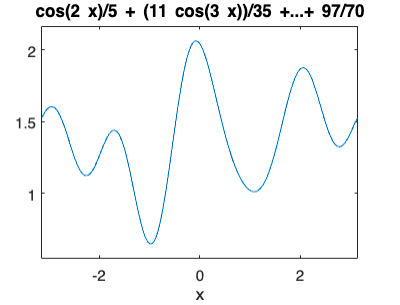
disp(simplify(FS))

ezplot(FS,[-l,l])

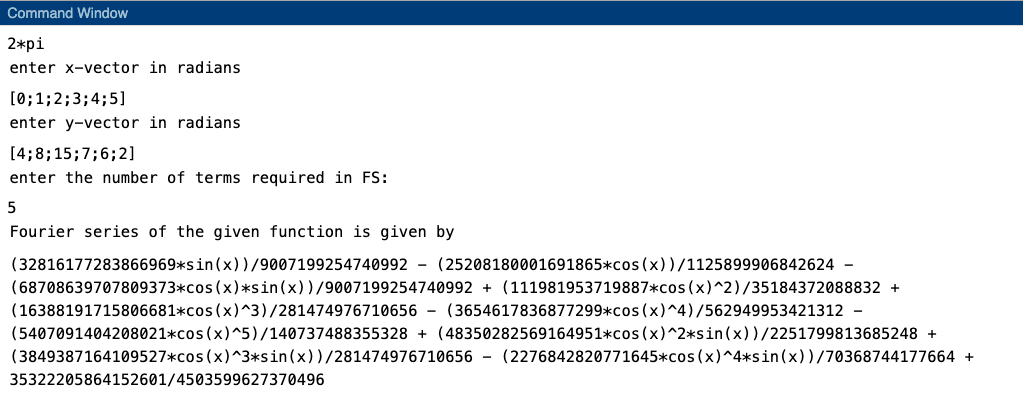
Input 1: -



Graph: -



Input 2: -



Graph: -

