CODE from M-file FourierSeriestest1.m
A square wave A (T=2*pi)

Show 3 terms and then 51 odd terms to N=101

```matlab
clear, clf
close
nmax = 5; %  Iterations for the Fourier series
x = linspace(-2*pi,2*pi,1000); % Domain of plot  1000 points
% Plot of function f(x)- the square wave from -2pi to 2pi
for i = 1:length(x)
if x(i) <= -pi | (x(i) > 0 & x(i) <= pi)
f(i) = 1;
end
if (x(i) > -pi & x(i) <= 0) | x(i) > pi
f(i) = -1;
end

end
figure(1),plot(x,f),title('Press a key for next Harmonic')
hold on
% Calculate and plot first 3 partial sums
A0 = 0; y = A0;
for n=1:2:nmax
An = 0;   % Series is odd
Bn = 4/(n*pi);
y = y + An*cos(n*x) + Bn*sin(n*x);
plot(x,y)
hold on
fprintf('Press a Key')
pause
end
xlabel('x'),ylabel('y'),title('Fourier Series of Square Wave')
legend('f','n = 1','n = 3','n = 5')
hold off
% Do (101-1)/2 +1  51 odd terms
A0=0, y101 = A0;
for n1=1:2:101
An = 0;
Bn = 4/(n1*pi);
y101 = y101 + An*cos(n1*x) + Bn*sin(n1*x);
end
fprintf('Press a Key'),pause
figure(2)
plot(x,y101),grid,xlabel('x'),ylabel('y101')
title('Fourier Series of Square Wave Train for n=1,3,5,...101')

Press a KeyPress a KeyPress a Key
A0 =
```
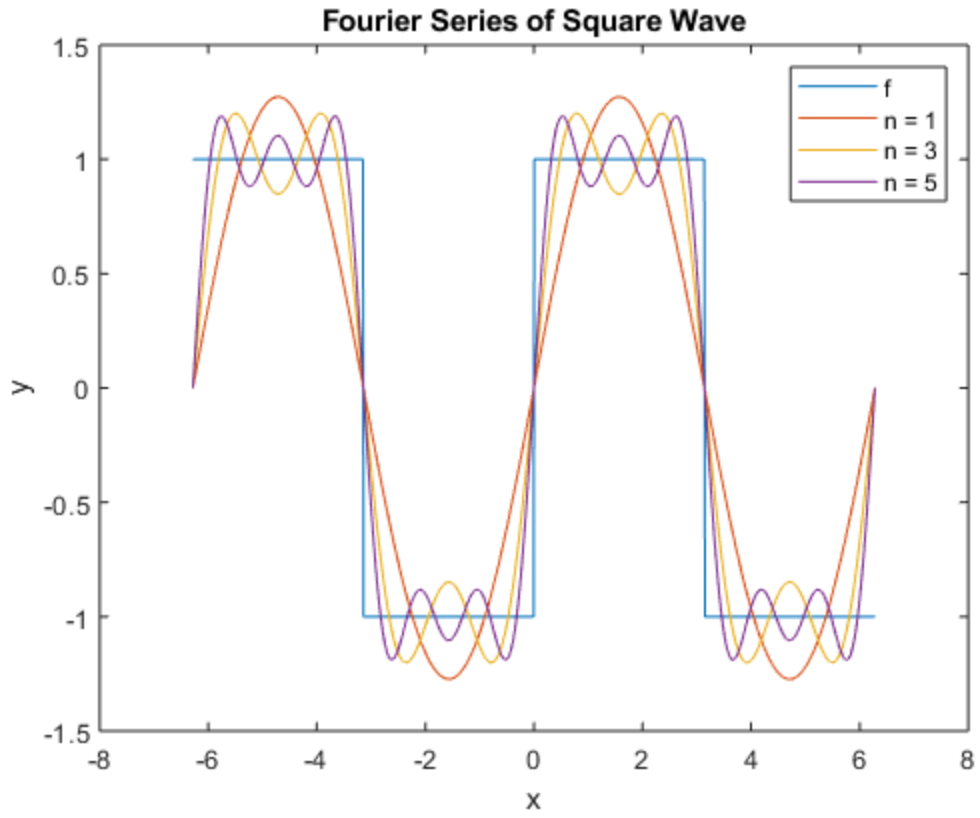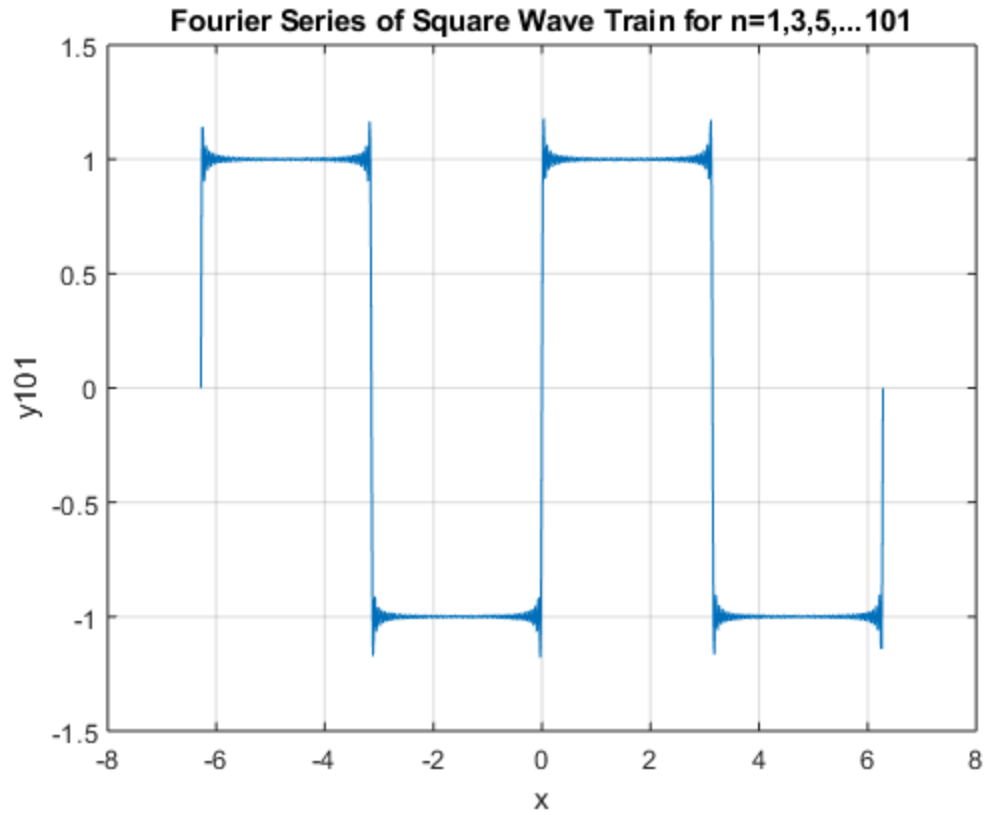
0

Press a Key

Fourier Series of Square Wave

Fourier Series of Square Wave Train for n=1,3,5,...101

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