## Problem 6b

```
clear; clc;
x = [-1 1 -1 1 -1]; % Present input x(n) in row vector
h = [1 -1 1 -1 1];  % Present impulse response h(n) in row vector

y = conv(x,h);      % Convolution function

% Draw output y(n)
stem(y, 'bo');
xlabel('n');
ylabel('y(n) = x(n) * h(n)');
axis([0 10 -6 6]);  % Range of n and range of value of y(n)
```

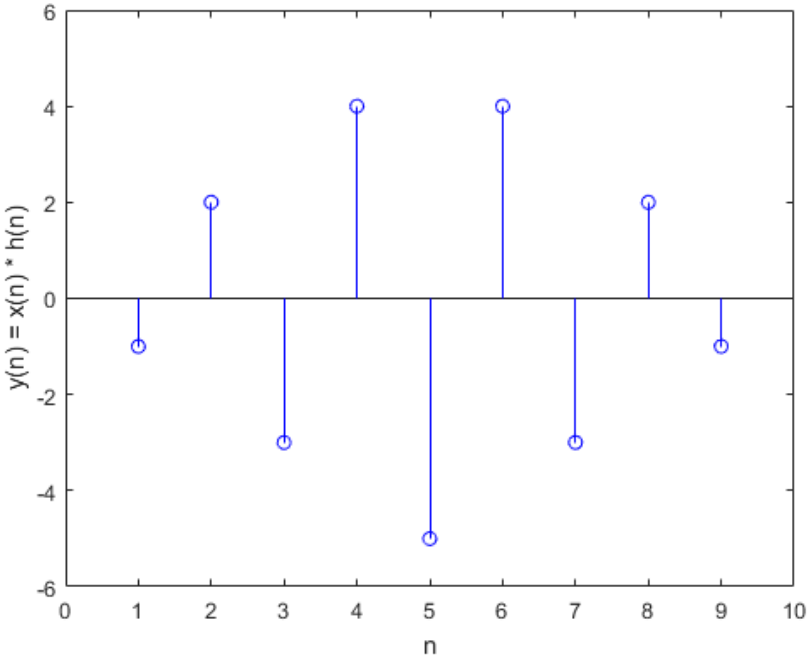


**Figure 1.** The output y(n) drawn by Matlab

## Problem 7

```
clear; clc;

t = 0 : pi/50 : 7*pi;    % Range of time
Omega = 0.5 * pi;        % Omega value

% Draw positive complex exponential
Re_pos = cos(Omega*t);
Im_pos = sin(Omega*t);
subplot(1,2,1);
plot3(t, Re_pos, Im_pos, 'b', 'LineWidth', 2);
ax = gca;
ax.YColor = 'm';
ax.ZColor = 'm';
```

```
ax.LineWidth = 2;
ax.GridColor = 'k';
ax.GridLineStyle = ':';
grid;
title('e^{+j\Omegat} (Positive CE)');
xlabel('Time, t', 'Color', 'black', 'rotation', 23);
zlabel('Amplitude in Imaginary axis, Im', 'Color', 'black');

% Draw negative complex exponential
Re_neg = cos(-Omega*t);
Im_neg = sin(-Omega*t);
subplot(1,2,2);
plot3(t, Re_neg, Im_neg, 'r', 'LineWidth', 2);
ax = gca;
ax.LineWidth = 2;
ax.YColor = 'm';
ax.ZColor = 'm';
ax.LineWidth = 2;
ax.GridColor = 'k';
ax.GridLineStyle = ':';
grid;
title('e^{-j\Omegat} (Negative CE)');
xlabel('Time, t', 'Color', 'black', 'rotation', 23);
ylabel('Amplitude in Real axis, Re', 'Color', 'black');
ylh = get(gca,'ylabel');
ylp = get(ylh,'Position');
set(ylh, 'Rotation', -35, 'Position', ylp, 'VerticalAlignment',
'middle', 'HorizontalAlignment', 'right');
```

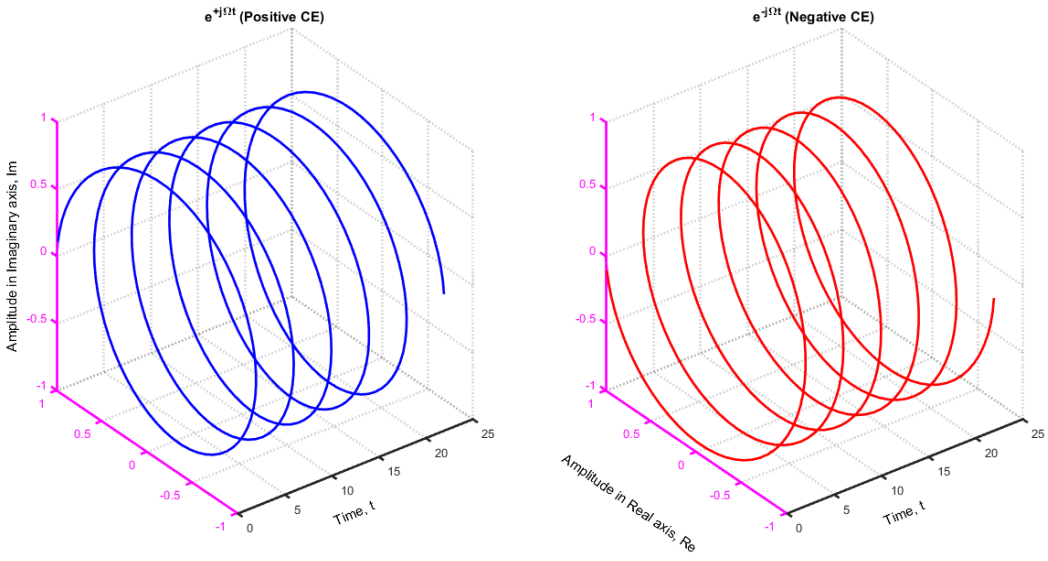


**Figure 2.** The graph of positive and negative complex exponentials