Signals and Systems MATLAB HW1

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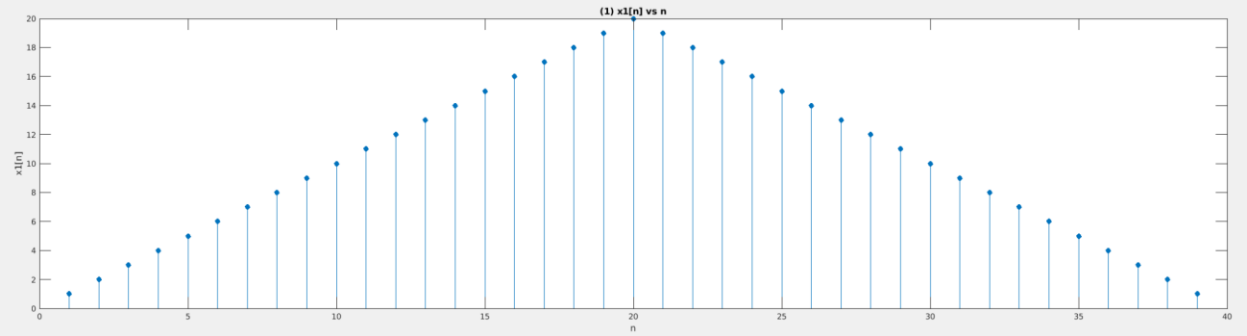
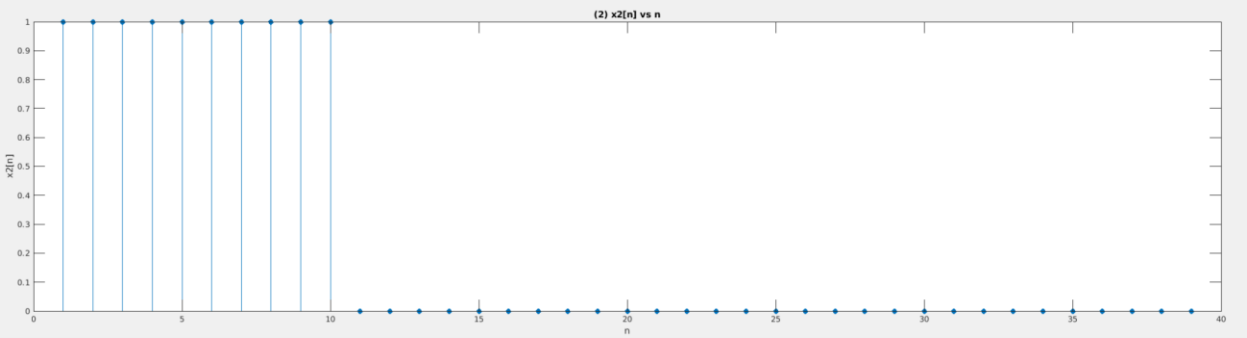
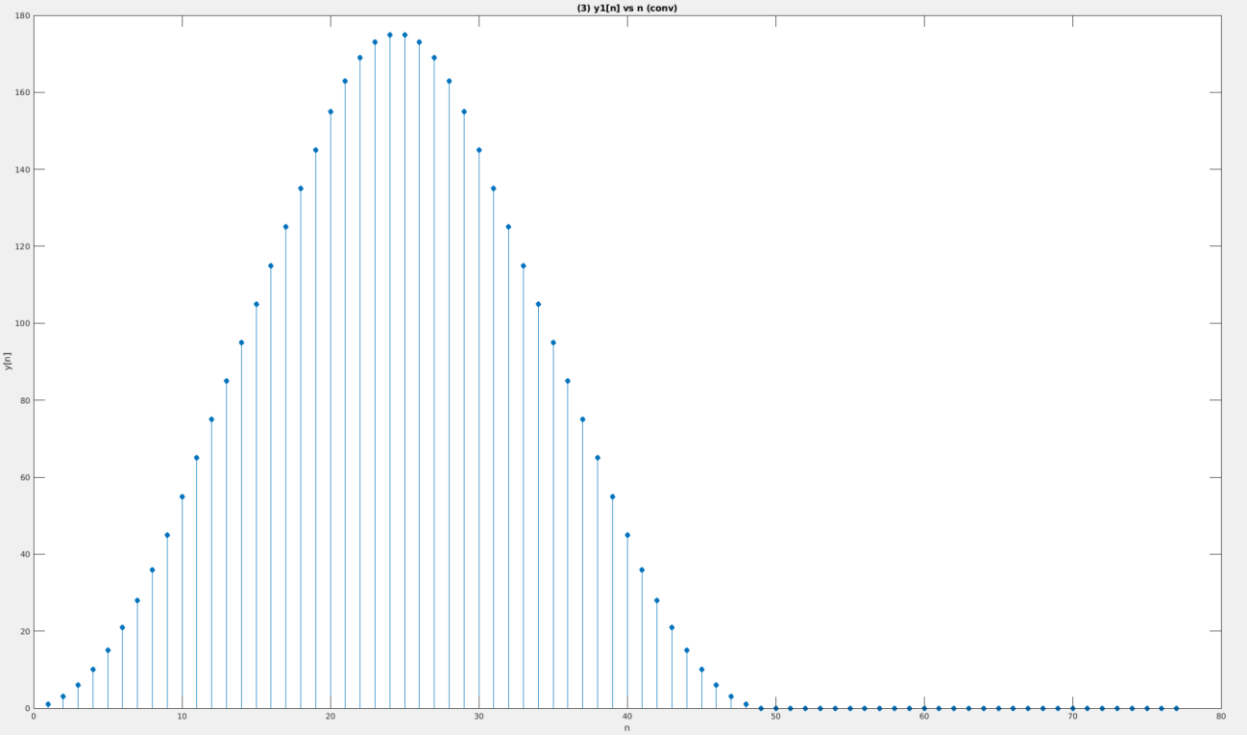
(a)

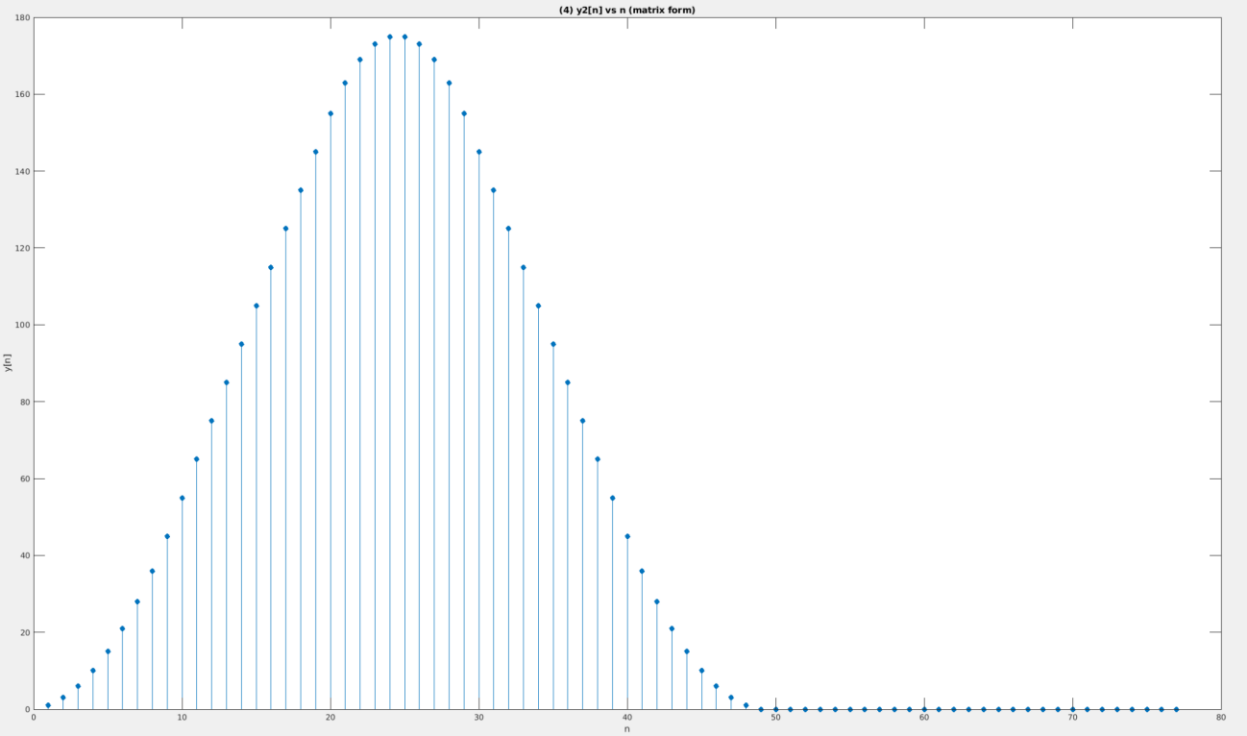




(b)

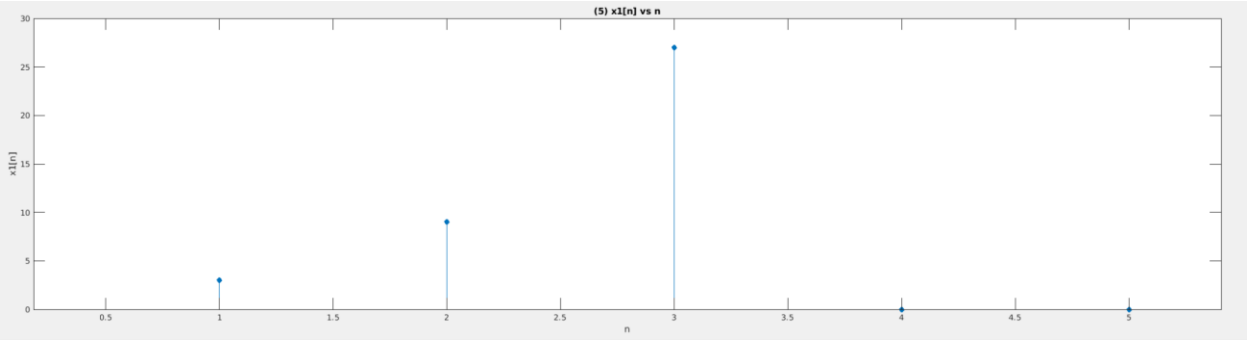


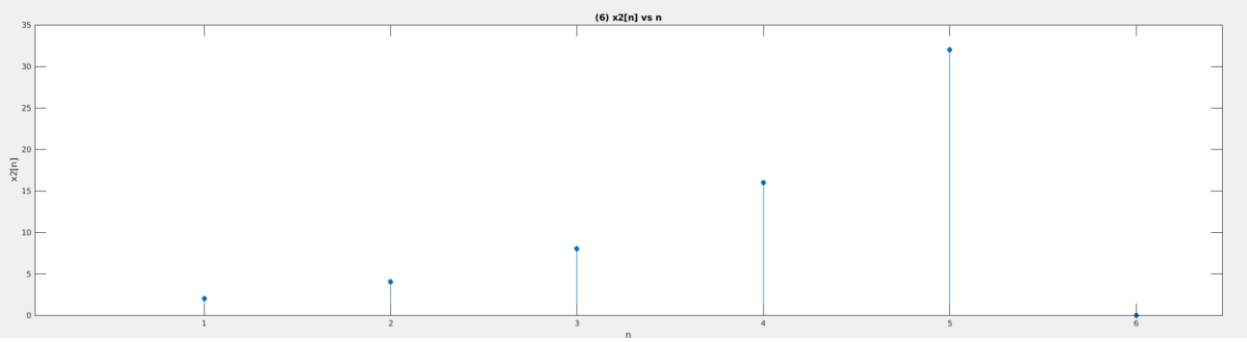
(c)

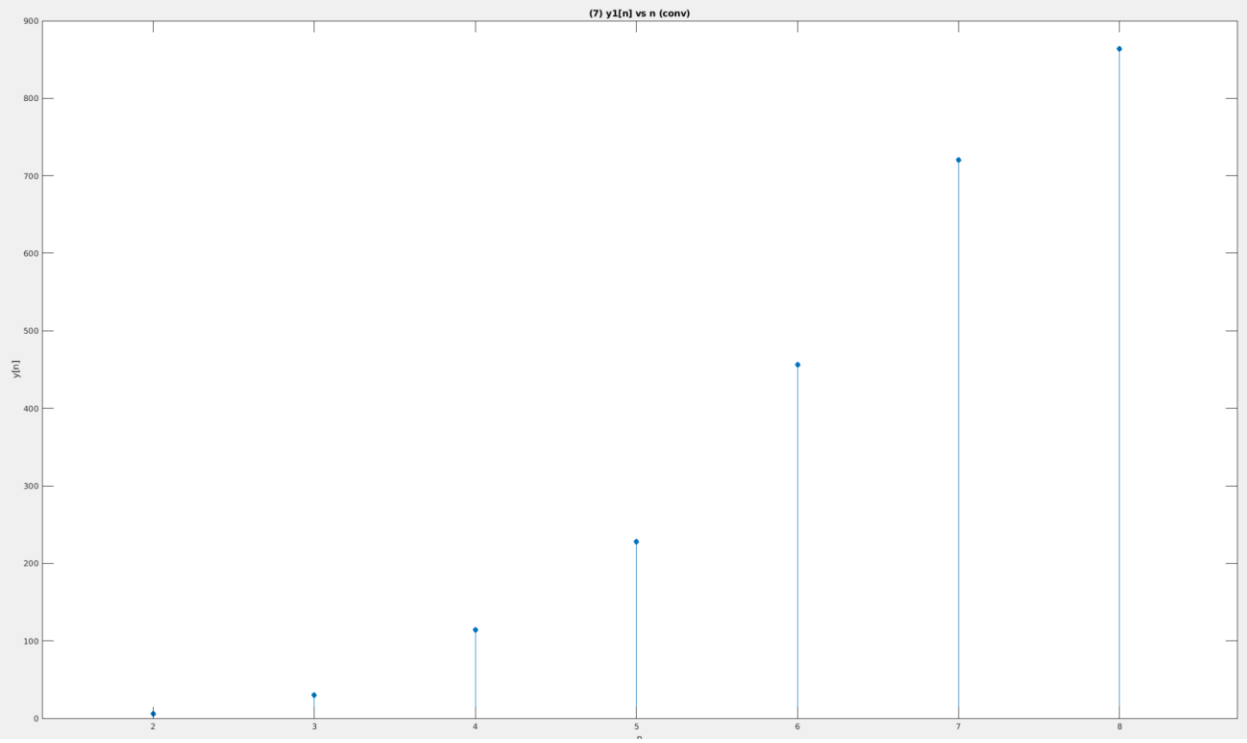


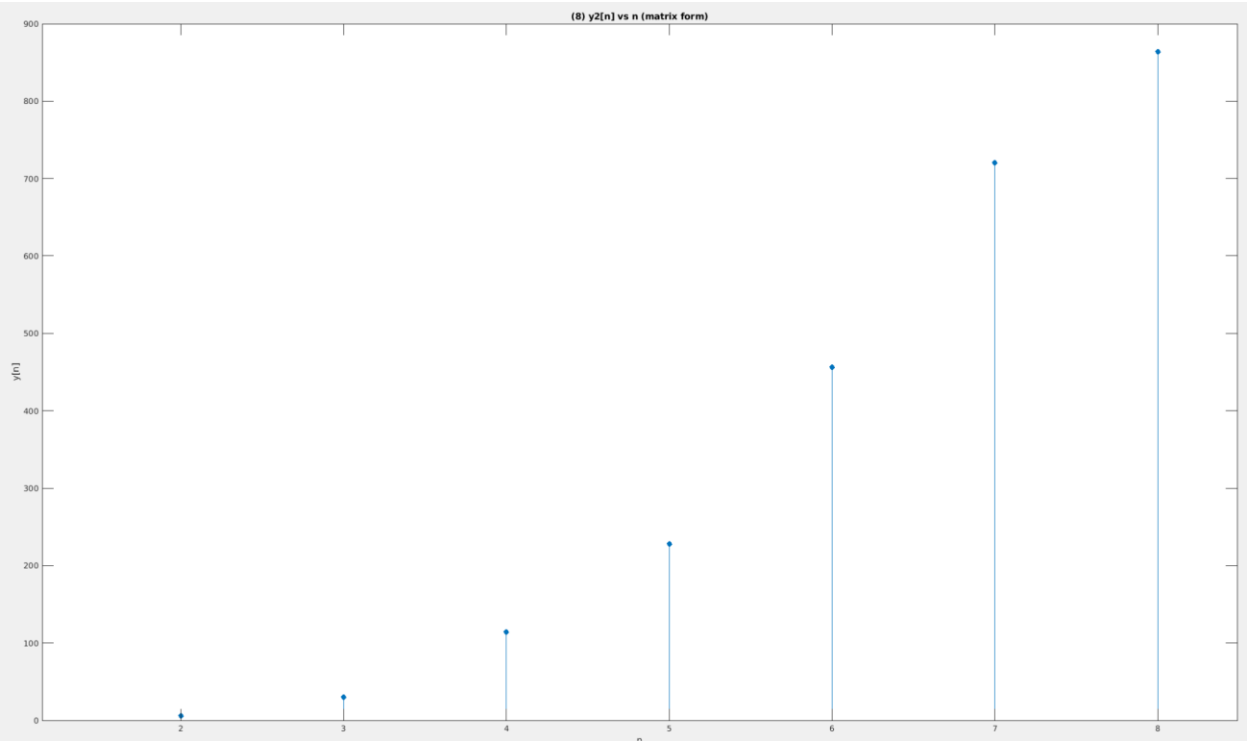
From the observation, every points in (3) = (4)

(d)









From the observation, every points in (7) = (8)

Code from Part (C)

```
% (c) Computing the convolution using matrix form
N1 = length(x1);
N2 = length(x2);
conv_matrix = zeros(N1 + N2 - 1, N1);
for k = 1:N1
   conv_matrix(:, k) = [zeros(k-1, 1); x1'; zeros(N1 - k, 1)];
end

y_matrix = conv_matrix * x2';

% Plot
figure;
stem(1:length(y_matrix), y_matrix, 'filled');
xlabel('n');
ylabel('y[n]');
title('(4) y2[n] vs n (matrix form)');
```