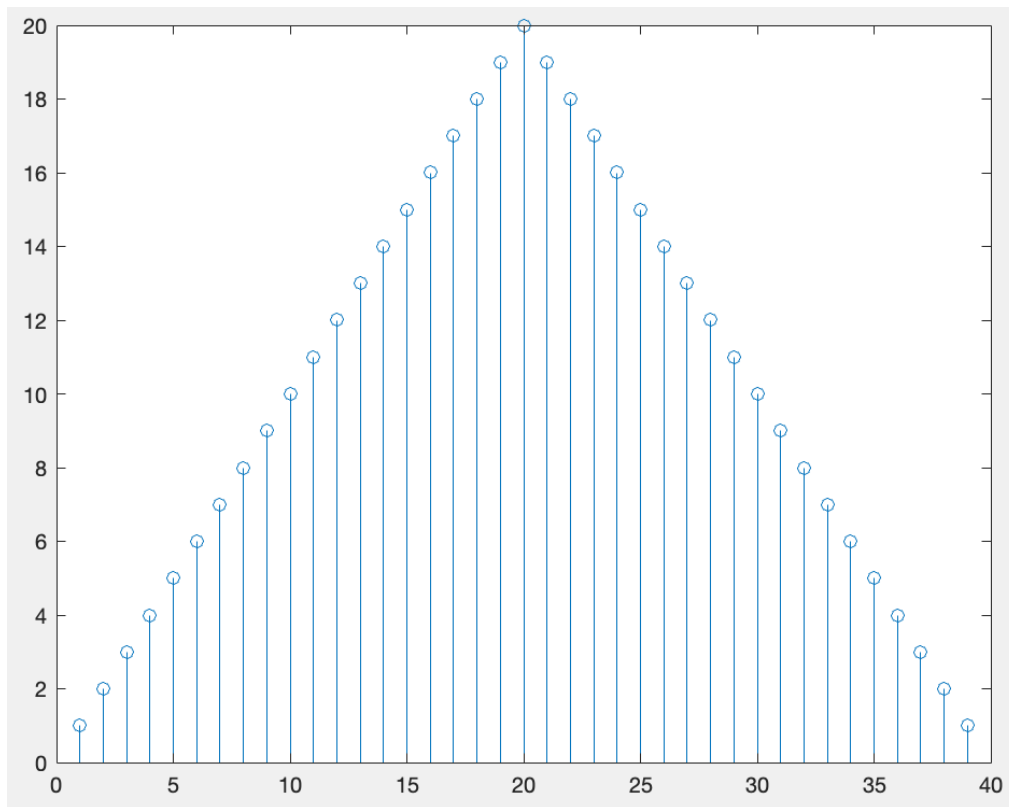


Signals and Systems MATLAB HW1

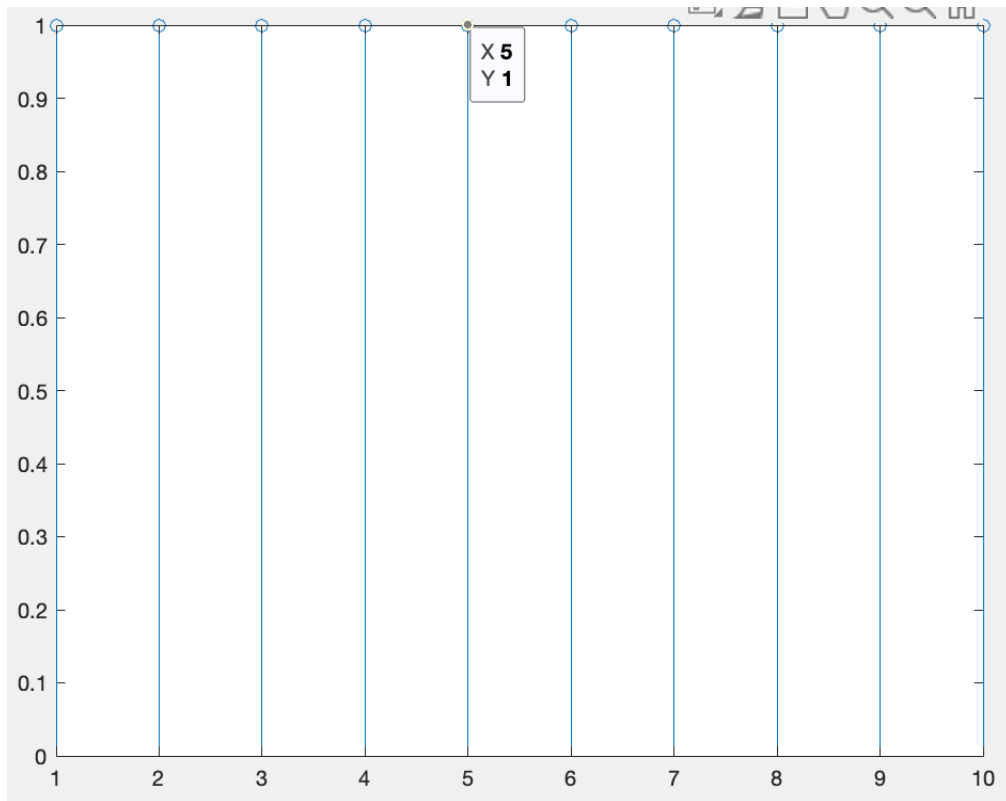
$$x_1[n] = \begin{cases} n, & 1 \leq n \leq 20 \\ 40 - n, & 21 \leq n \leq 39 \\ 0, & \text{elsewhere} \end{cases} \quad x_2[n] = u[n - 1] - u[n - 11],$$

where u denotes the unit step function.

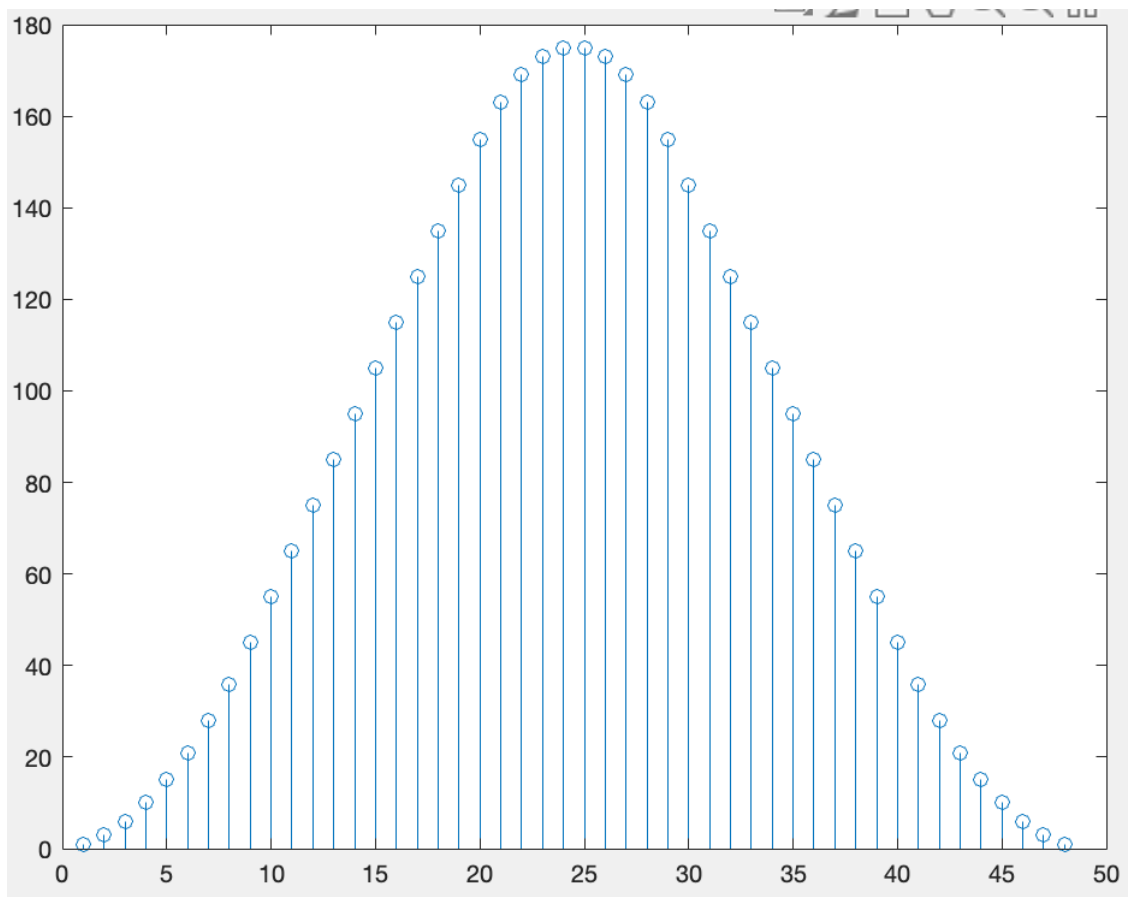
(a) $x_1[n]$ vs n



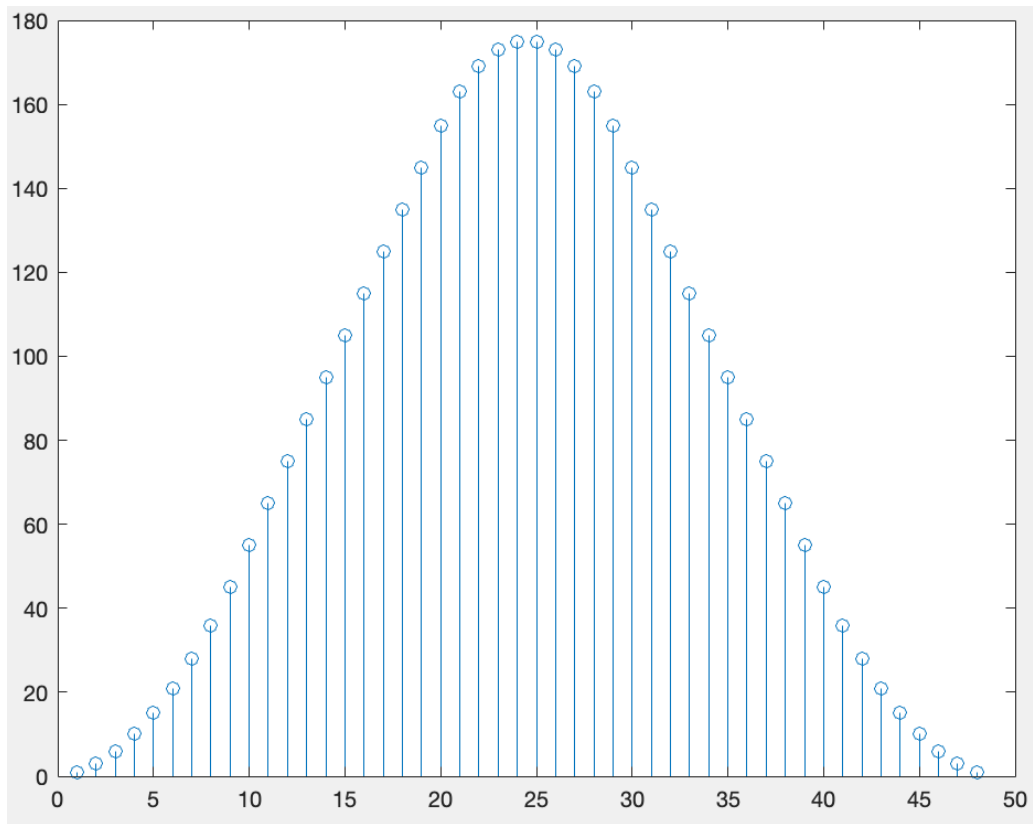
(a) $x_2[n]$ vs n



(b) $y[n]$ vs n

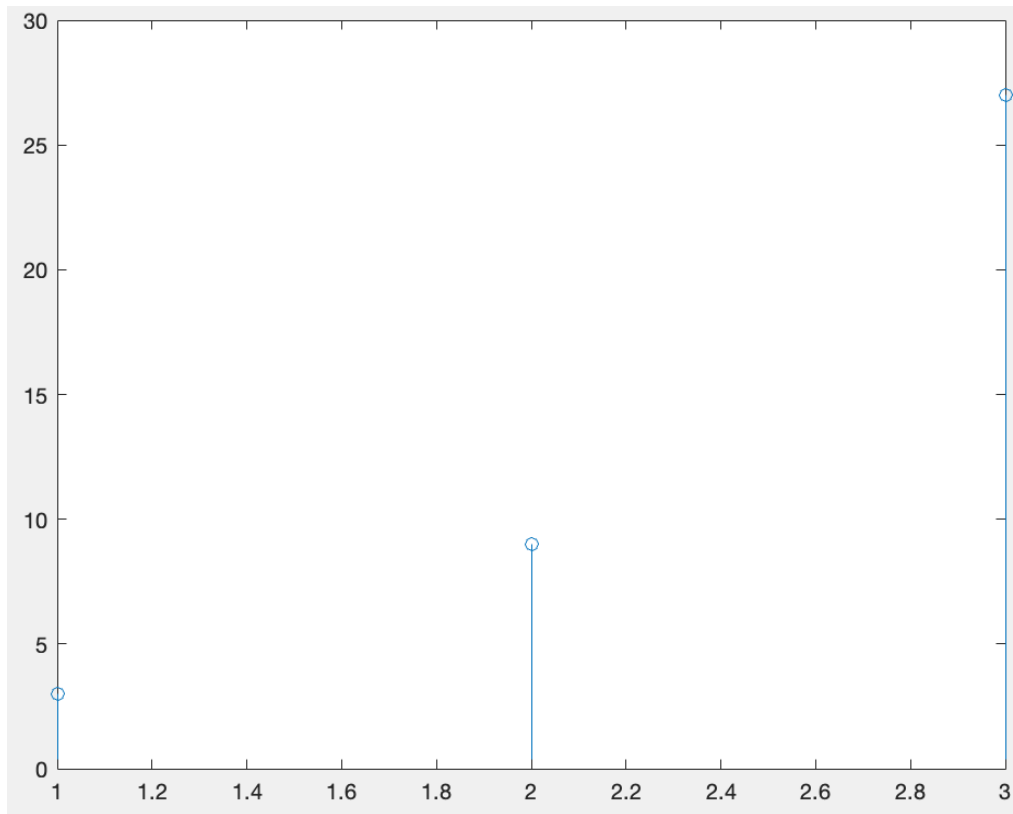


(c) $y[n]$ vs n

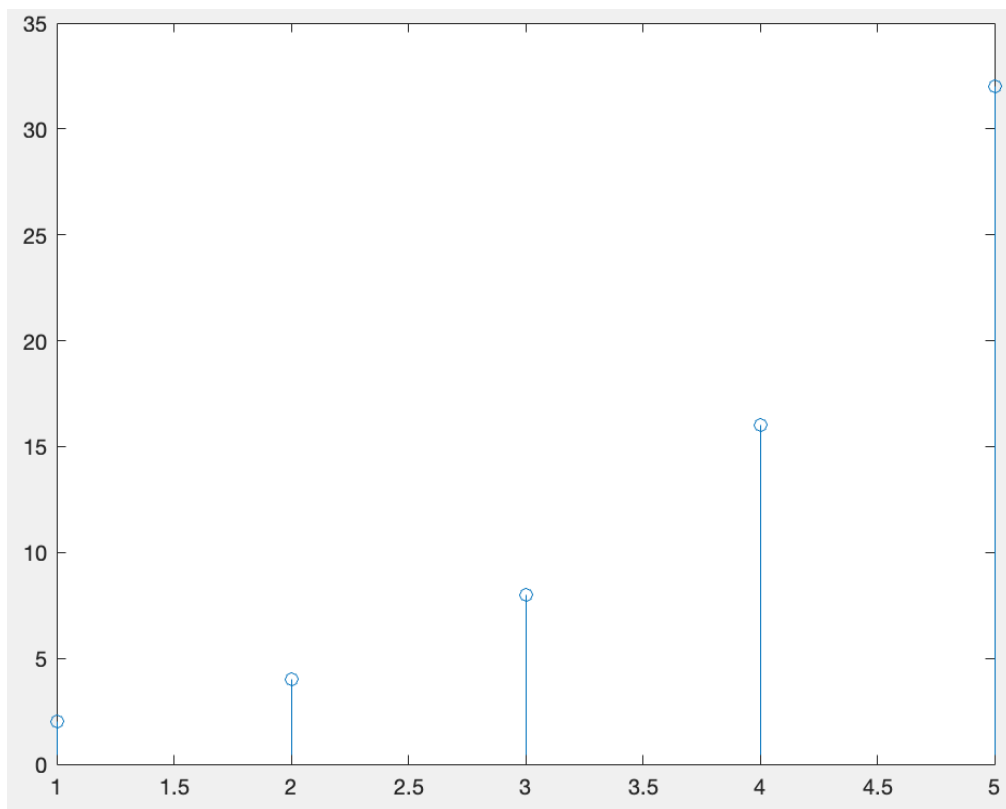


$$x_1[n] = \begin{cases} 3^n, & 1 \leq n \leq 3 \\ 0, & \text{elsewhere} \end{cases} \quad x_2[n] = \begin{cases} 2^n, & 1 \leq n \leq 5 \\ 0, & \text{elsewhere} \end{cases}.$$

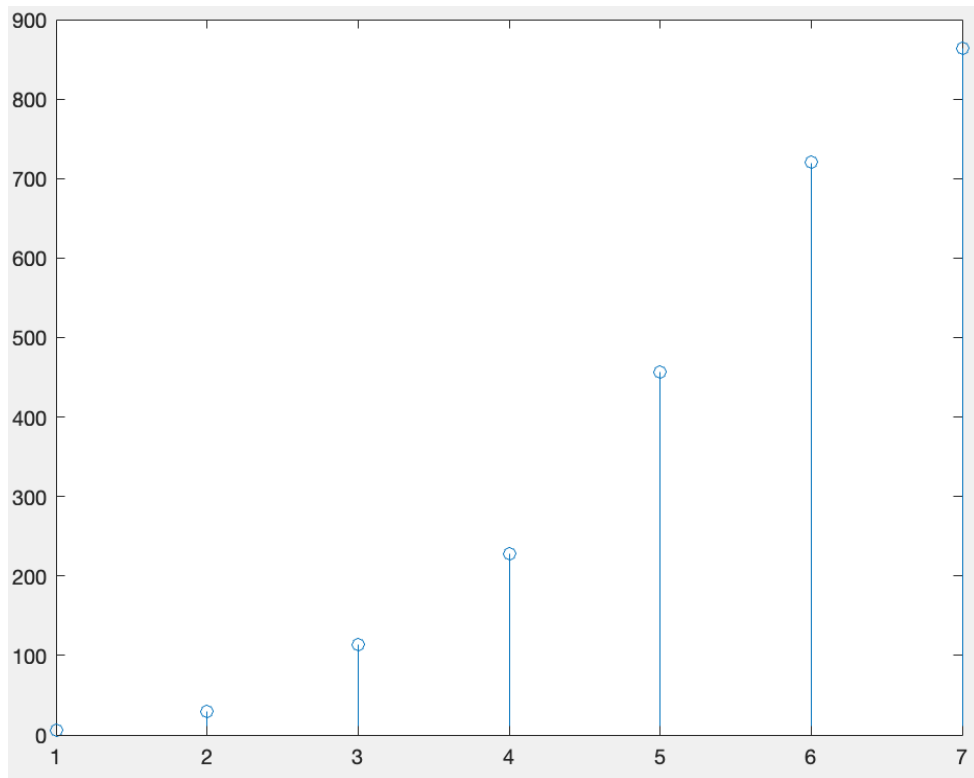
(d) $x_1[n]$ vs n



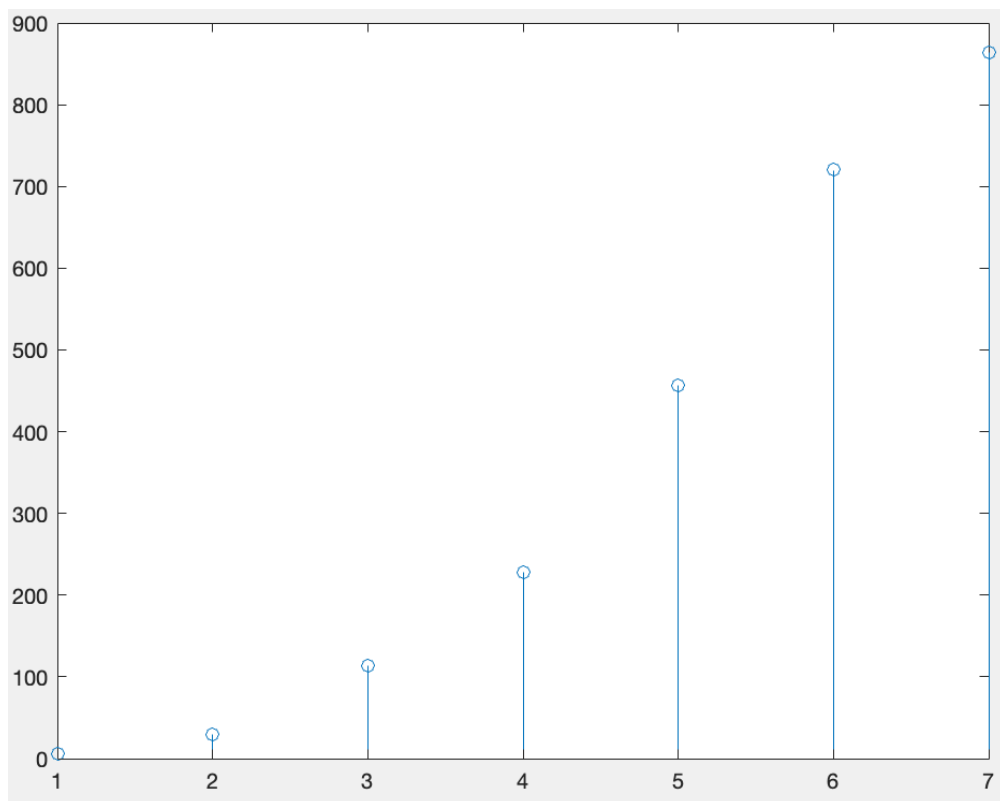
(d) $x_2[n]$ vs n



(d) $y[n]$ vs n



(d) $y[n]$ vs n



Part(c) code

```

%%(c)
N1 = length(x1);
N2 = length(x2);
matrix = zeros(N1 + N2 - 1, N2);
new_x2 = zeros(N2, 1);
for i = 1 : N2
    new_x2(i, 1) = 1;
end
for i = 1 : N2
    for j = i : i + N1 - 1
        matrix(j, i) = x1(j - i + 1);
    end
end
y2 = matrix*new_x2;
ans4 = figure();
stem(y2);

```