COLLEGE OF ENGINEERING AND TECHNOLOGIES
ALMUSTAQBAL UNIVERSITY

# Digital Signal Processing (DSP)

## CTE 306

## Lecture 7

## - Sequences -

**(2023 - 2024)**

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Lecturer / Researcher

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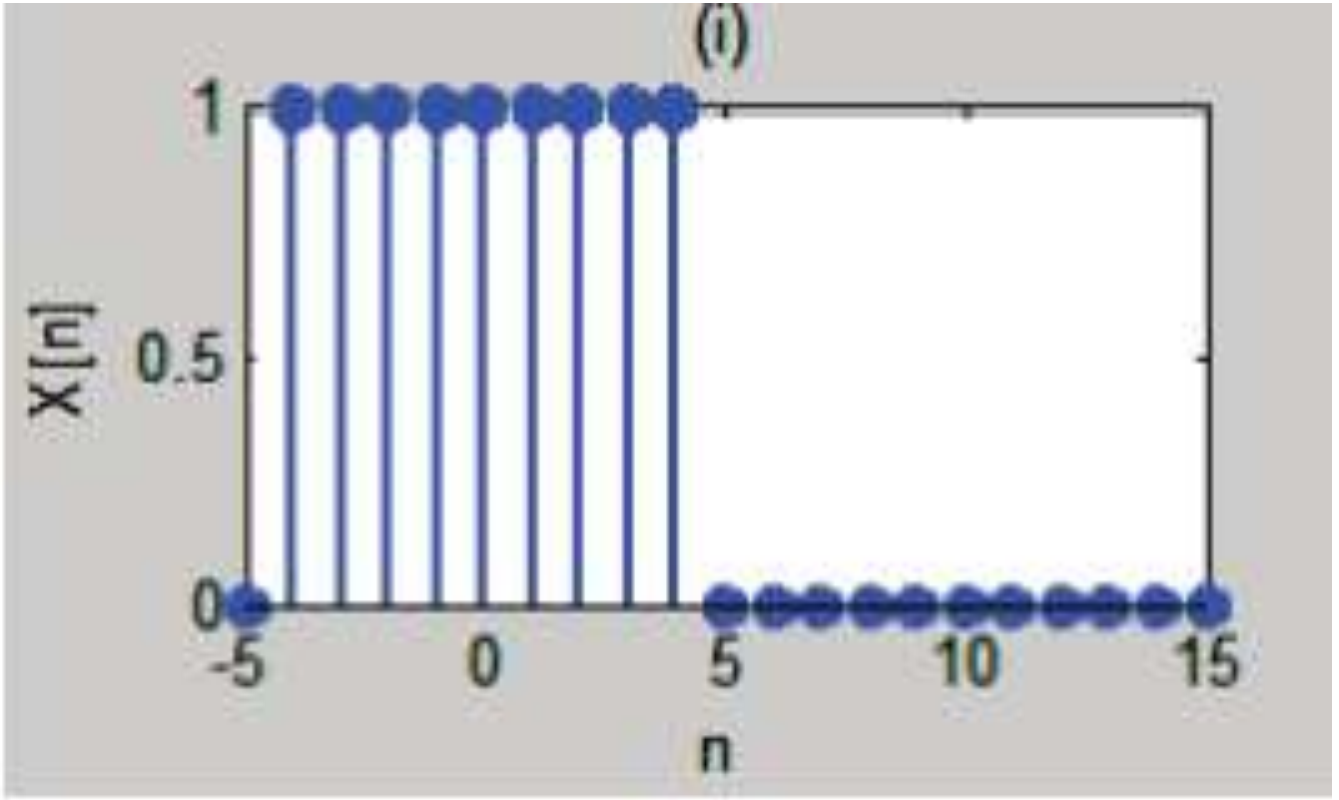
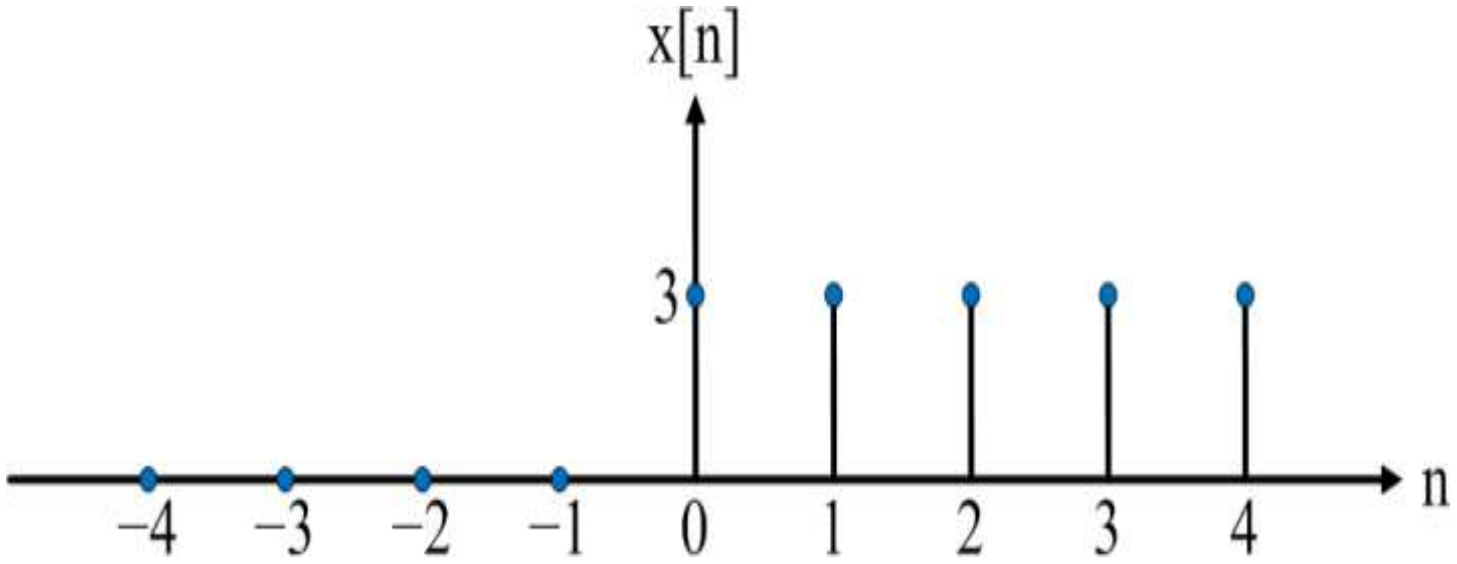
# Example

$$x[n] = \begin{cases} 1, & -4 \le n \le 4 \\ 0, & \text{otherwise} \end{cases}$$



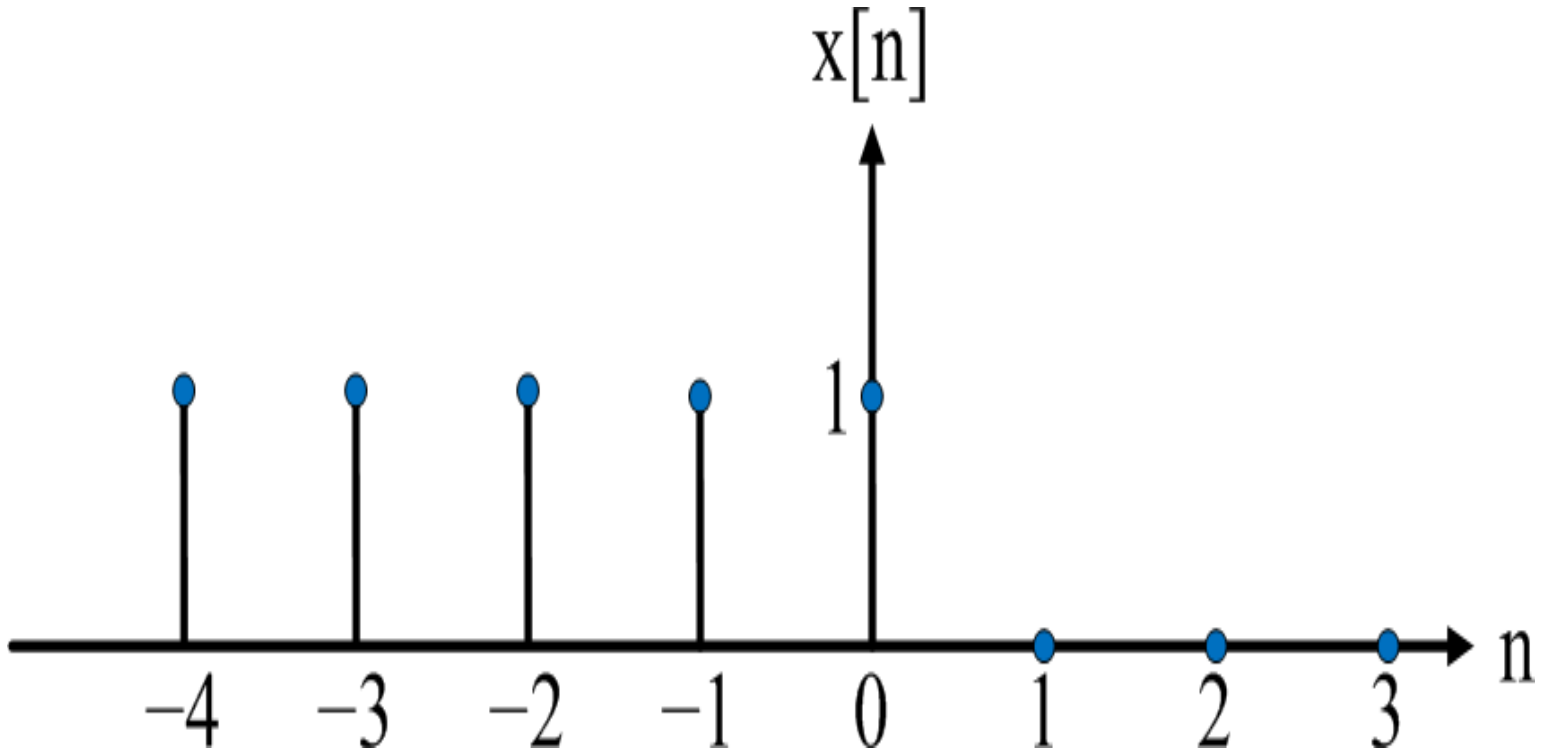
# Example

$$x[n] = 3u[n]$$



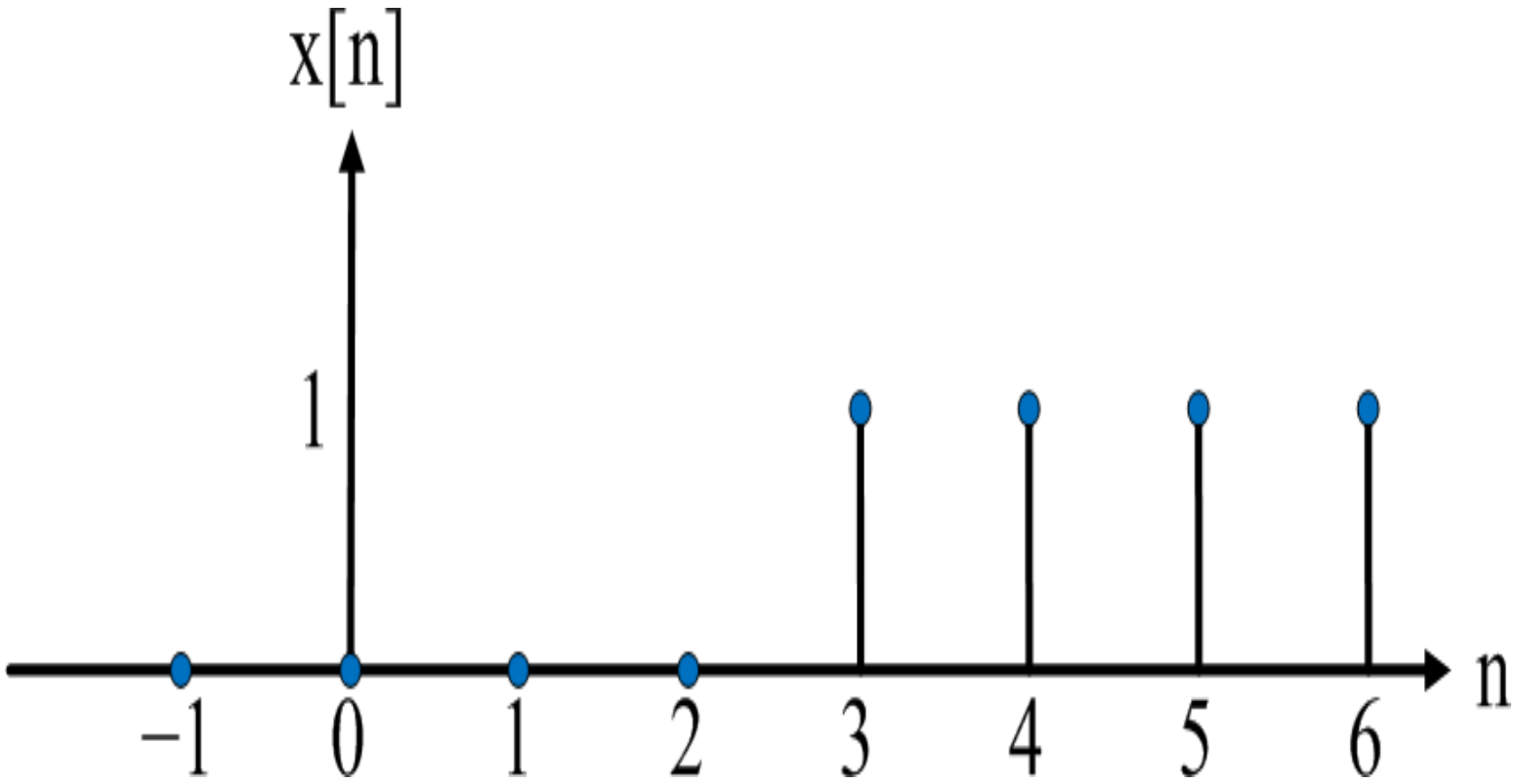
# Example

$x[n] = u[-n]$



# Example

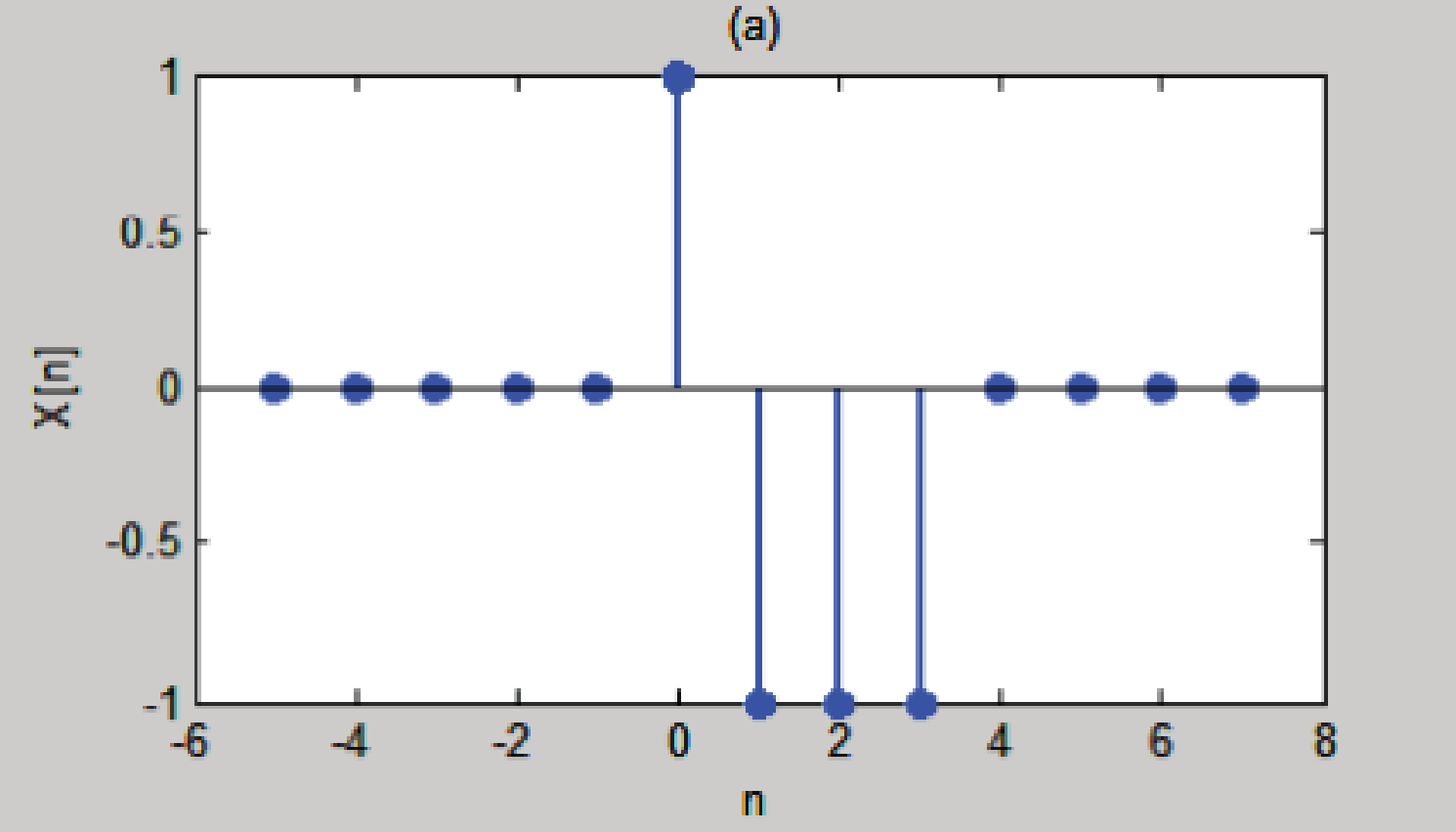
$$x[n] = u[n - 3]$$



# Example

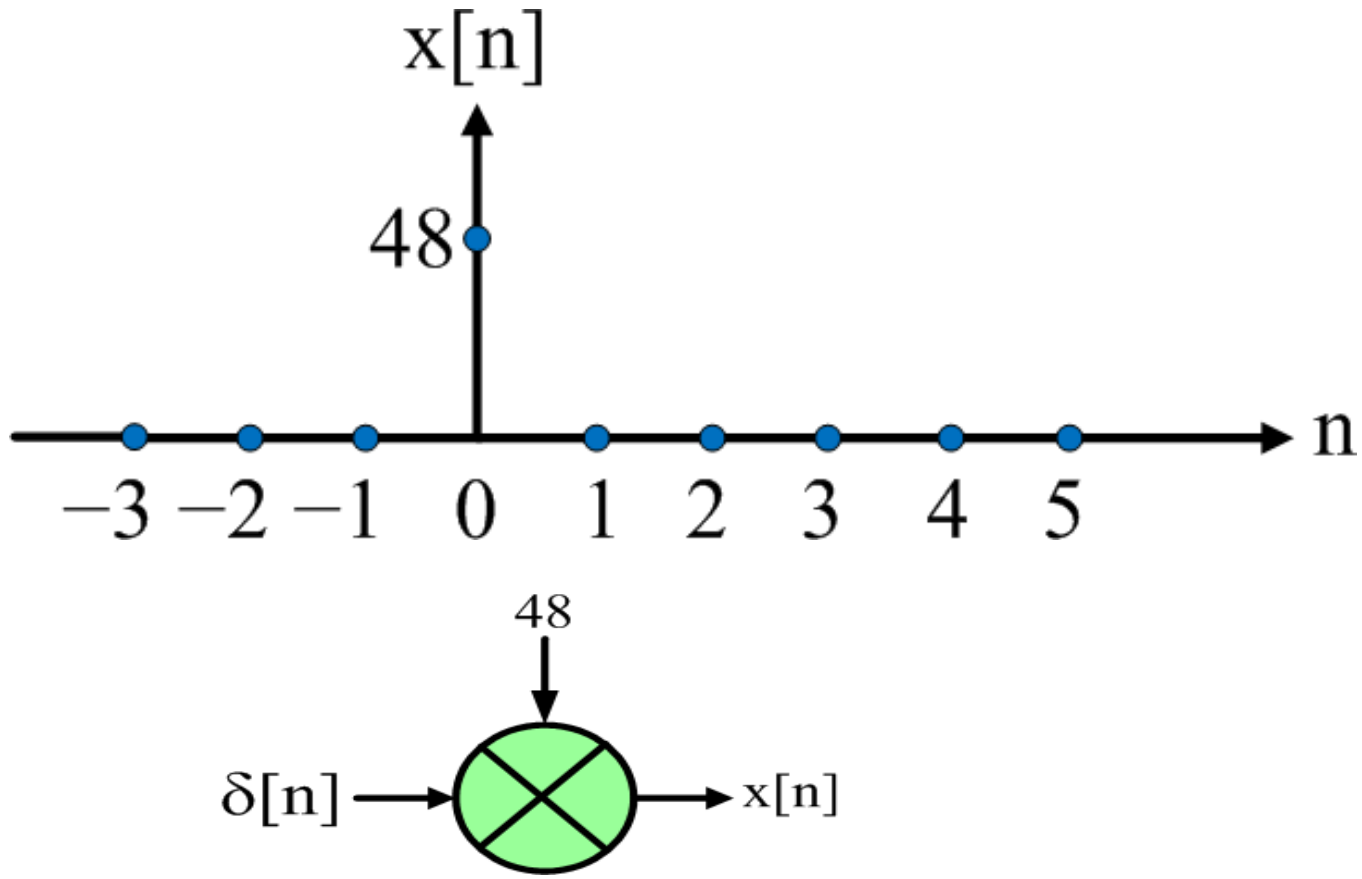


$$x[n] = u[n] - 2u[n-1] + u[n-4]$$



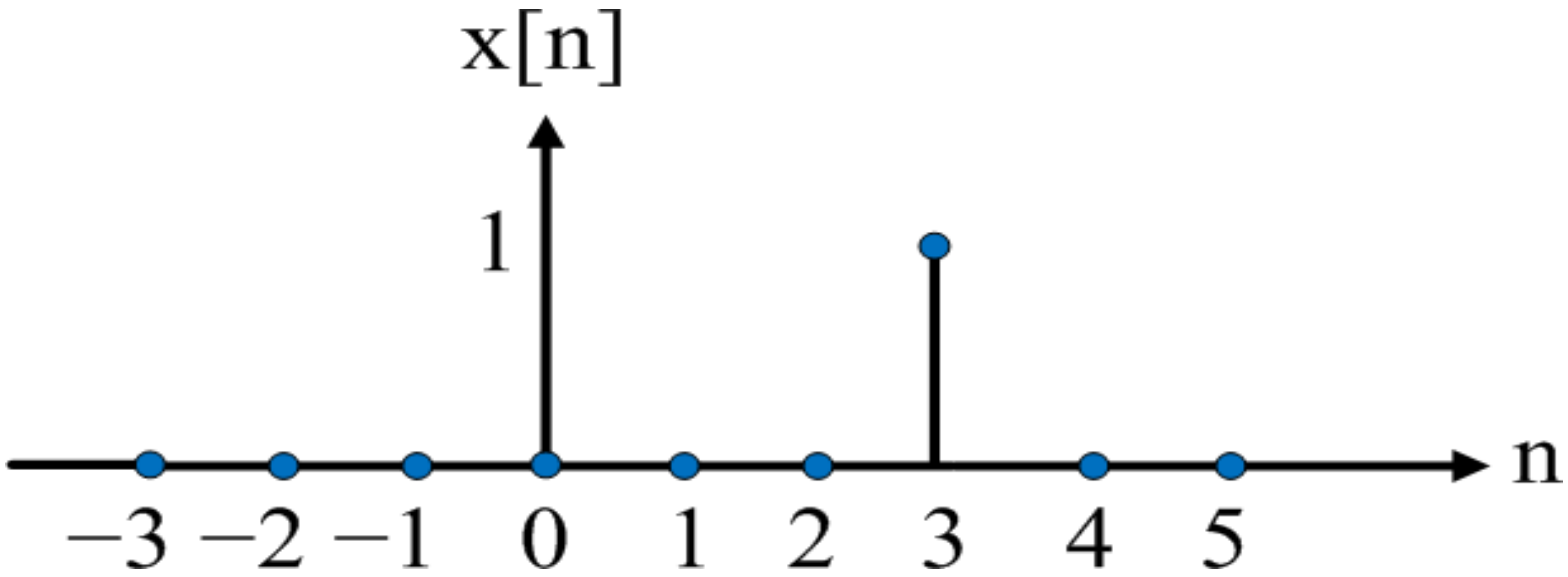
# Example

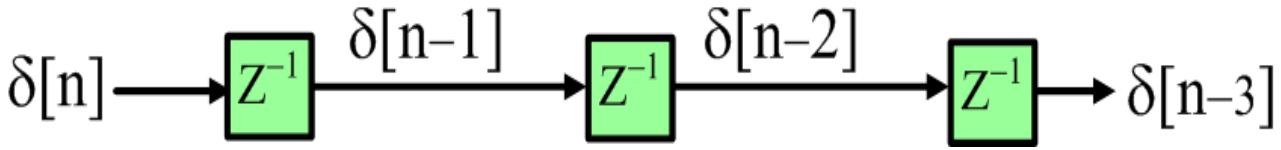
$$x[n] = 48\delta[n]$$



# Example

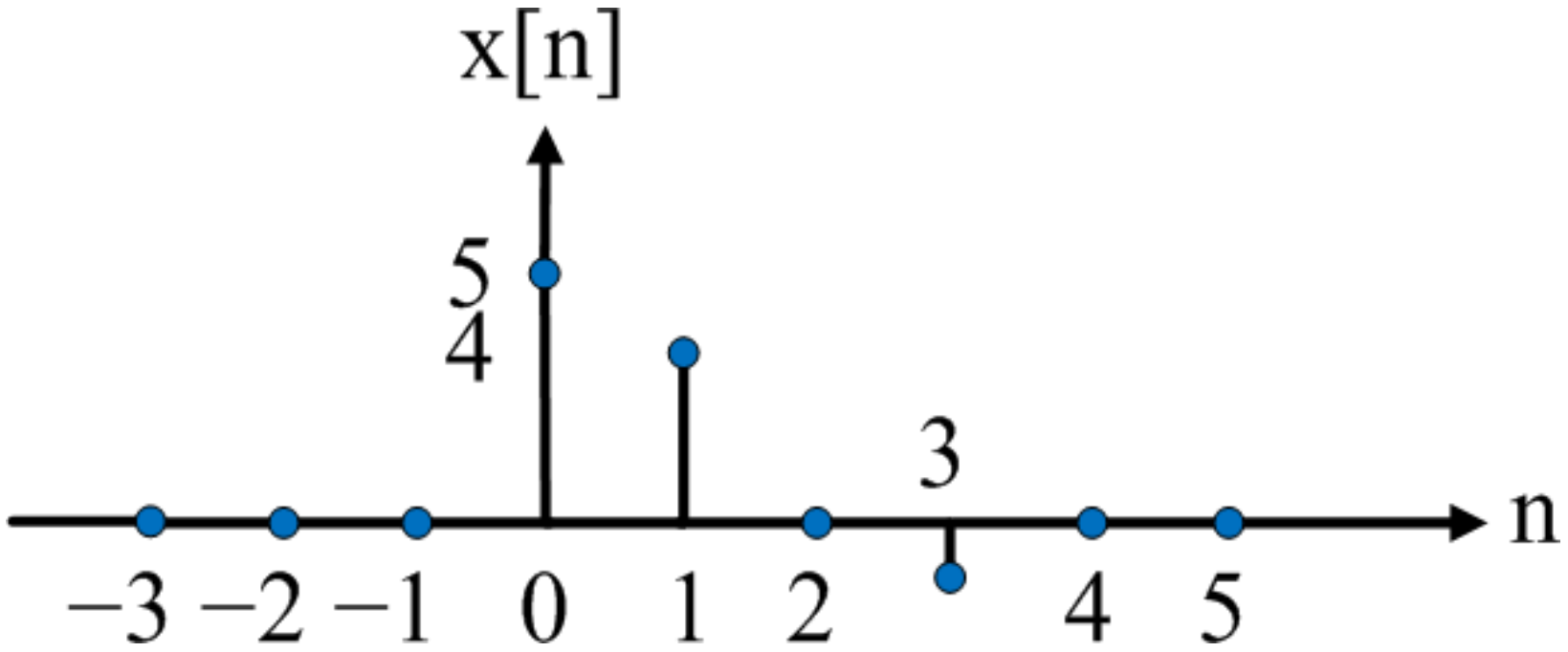
$$x[n] = \delta[n - 3]$$



# Example

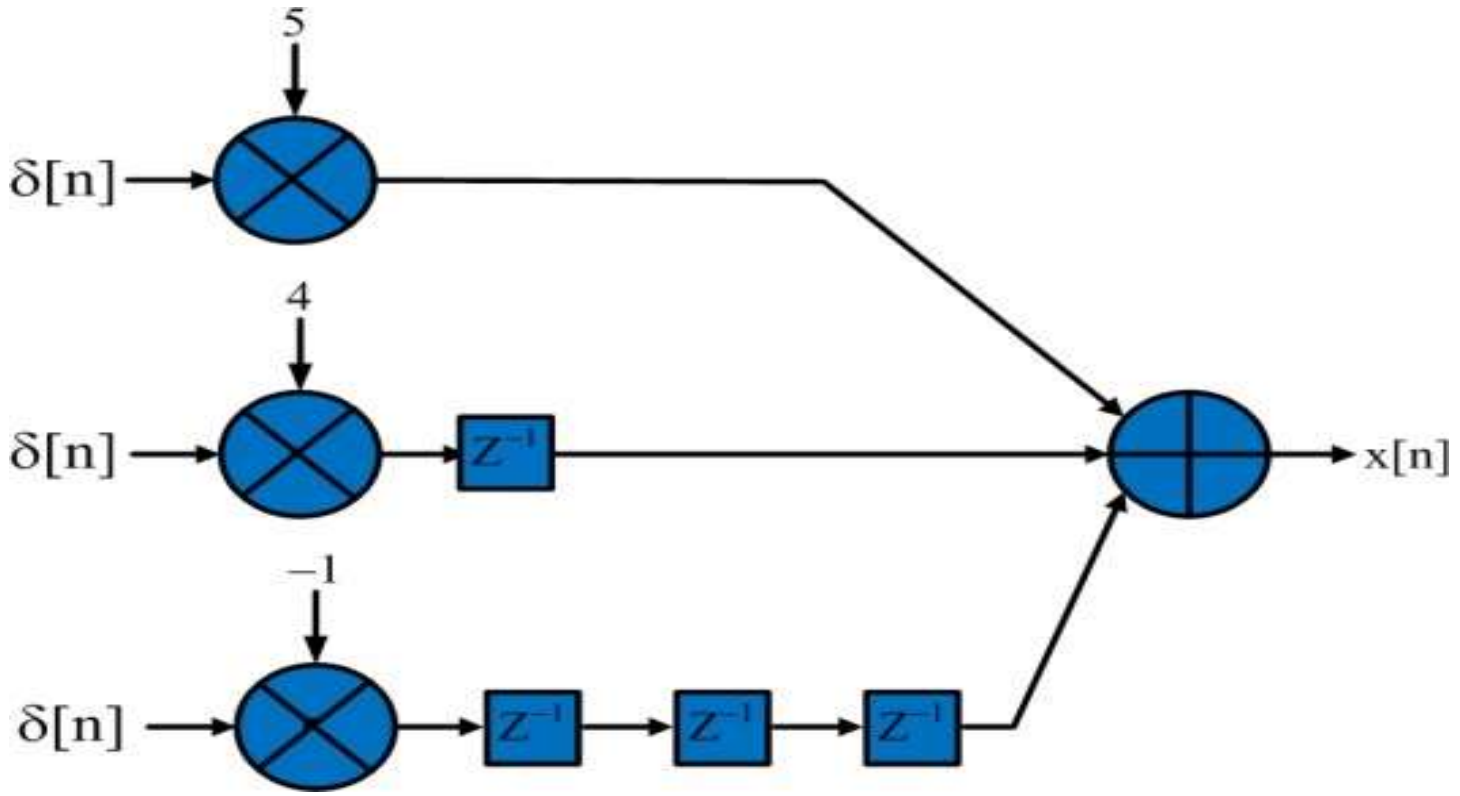
$$x[n] = 5\delta[n] + 4\delta[n-1] - \delta[n-3]$$



# Example



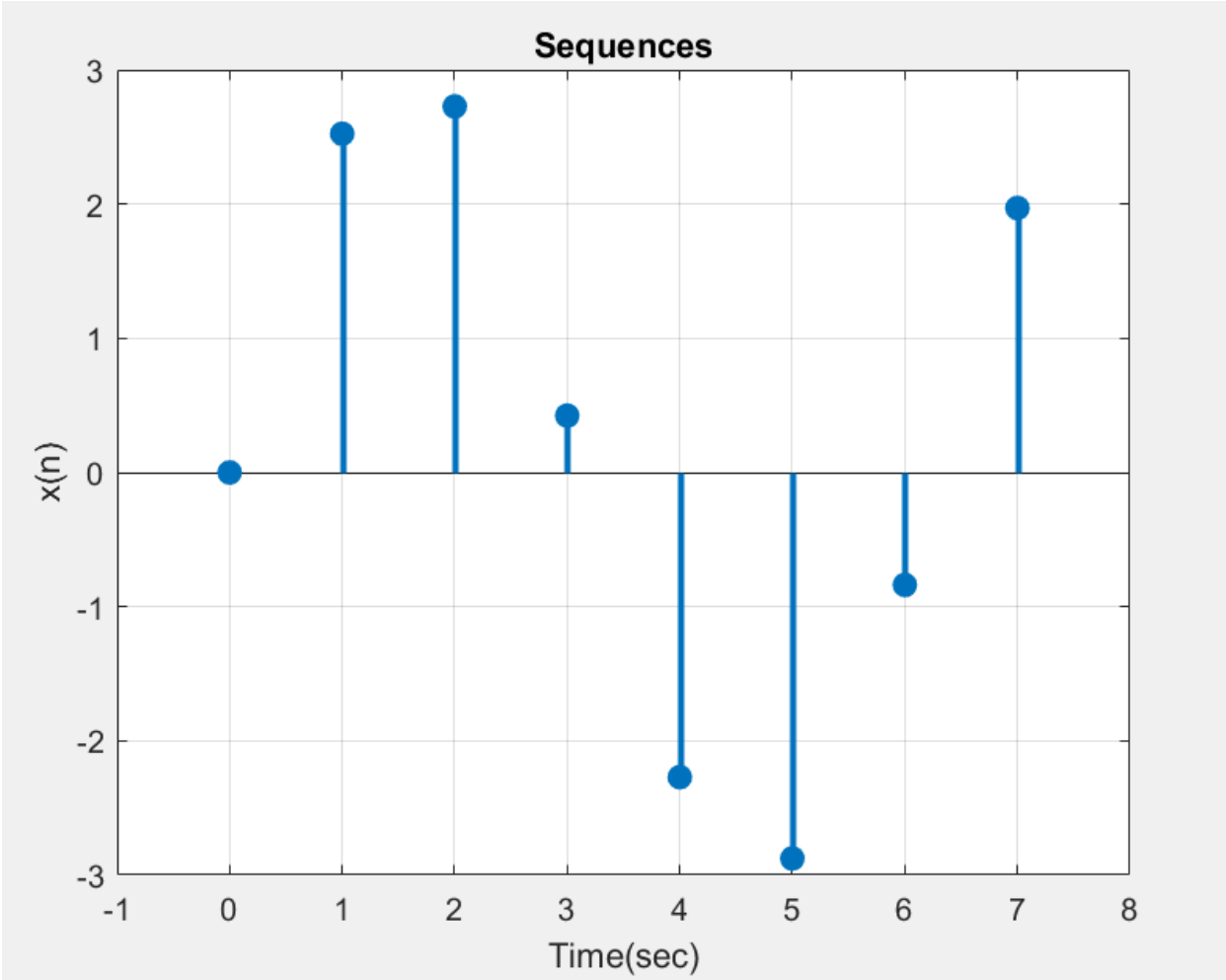
$$x[n] = 5\delta[n] + 4\delta[n-1] - \delta[n-3]$$



# Example

Draw the signal x[n] = 3 sin (n)

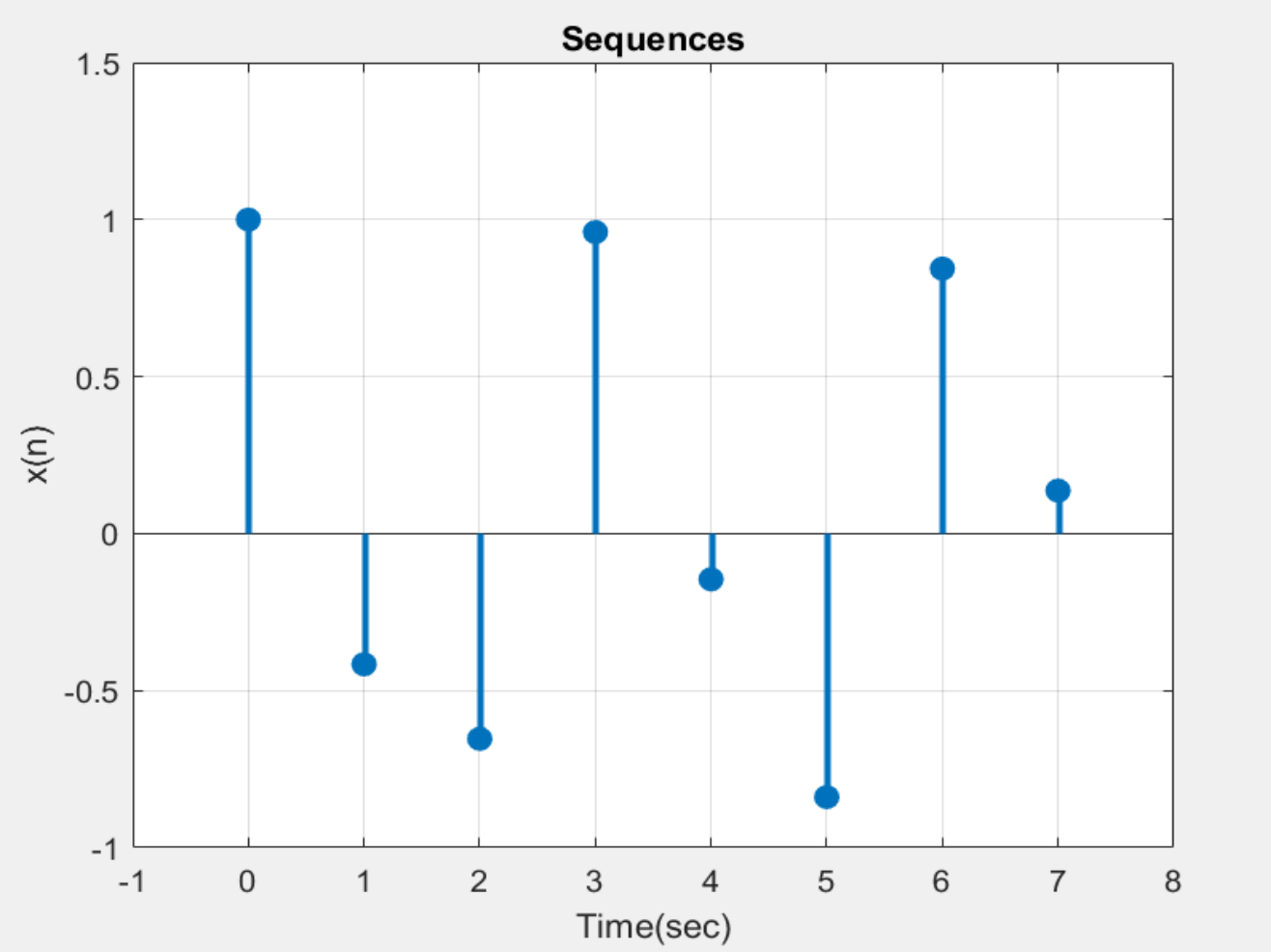
| n | x(n) |
|---|---|
| 0 | 0 |
| 1 | 2.5244 |
| 2 | 2.7279 |
| 3 | 0.4234 |
| 4 | -2.2704 |
| 5 | -2.8768 |
| 6 | -0.8382 |
| 7 | 1.9710 |



# Example

Draw the signal x[n] = cos (2n)

| n | x(n) |
|---|---|
| 0 | 1.0000 |
| 1 | -0.4161 |
| 2 | -0.6536 |
| 3 | 0.9602 |
| 4 | -0.1455 |
| 5 | -0.8391 |
| 6 | 0.8439 |
| 7 | 0.1367 |

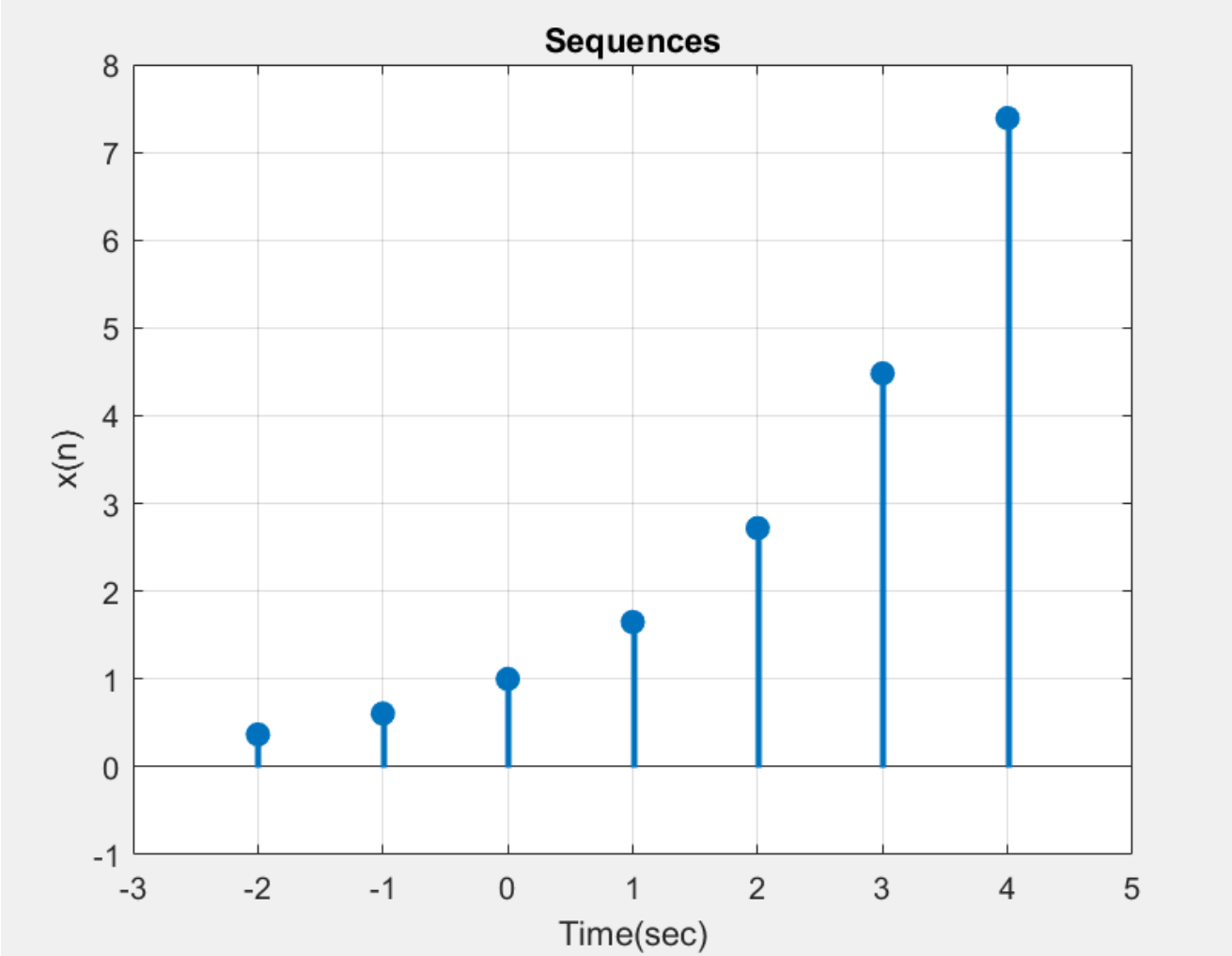


# Example



Draw the signal $x[n] = e^{0.5n}$

| n | x(n) |
|---|---|
| –2 | 0.3679 |
| –1 | 0.6065 |
| 0 | 1.0000 |
| 1 | 1.6487 |
| 2 | 2.7183 |
| 3 | 4.4817 |
| 4 | 7.3891 |



# Example

Draw the signal $x[n] = e^{-0.5n}$

| n | x(n) |
|---|---|
| –2 | 2.7183 |
| –1 | 1.6487 |
| 0 | 1.0000 |
| 1 | 0.6065 |
| 2 | 0.3679 |
| 3 | 0.2231 |
| 4 | 0.1353 |