Test 1

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Download the python codes from:

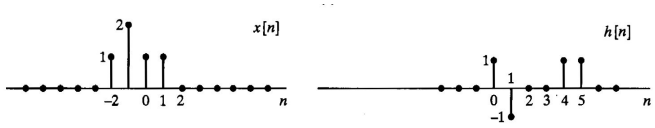
https://github.com/tanayyadav28/EE3900–Assignments/blob/main/Test_1/Test_1.py

Download the latex-tikz codes from:

https://github.com/tanayyadav28/EE3900–Assignments/blob/main/Test_1/Test_1.tex

1 Problem

[Q22.d]
For each of the pair of sequences in the following figure, use discrete convolution to find the response to the input $x[n]$ of the linear time-invariant system with impulse response $h[n]$.



2 Solution

For discrete convolution,

$$y[n] = x[n] * h[n] \tag{2.0.1}$$

$$y[n] = \sum_{k=-\infty}^{\infty} x[k]h[n-k] \tag{2.0.2}$$

$$\therefore y[n] = \sum_{k=-0}^{4} x[k]h[n-k] \tag{2.0.3}$$

Computing the above expression in python,

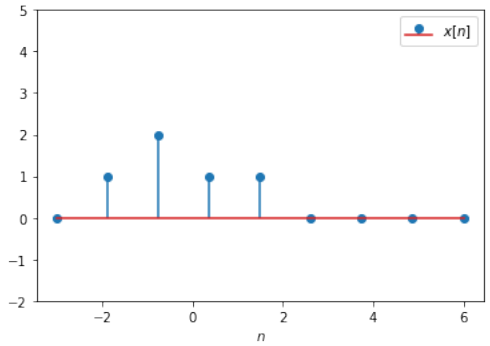


Fig. 0: $x[n]$

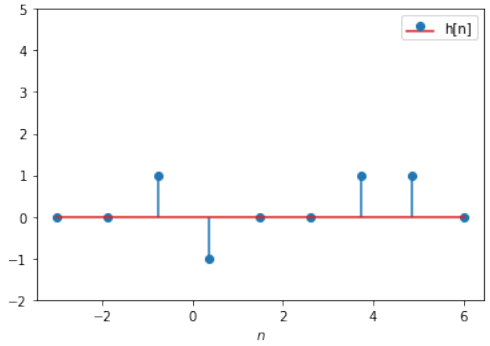


Fig. 0: $h[n]$

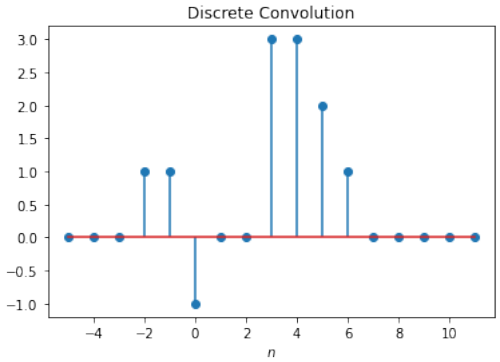


Fig. 0: $y[n]$