$$y[n] = h_0 x[n] + h_1 x[n-1] + \cdots + h_N x[n-N]$$

$$\mathbf{h} = [h_0, h_1, \ldots, h_N]$$

$$y[n] = x[n] * h[n]$$

$$y[n] = \sum_{i=0}^{N} h_i x[n-i]$$