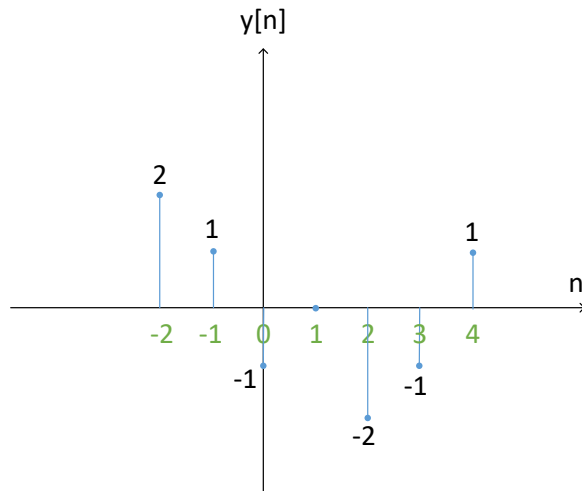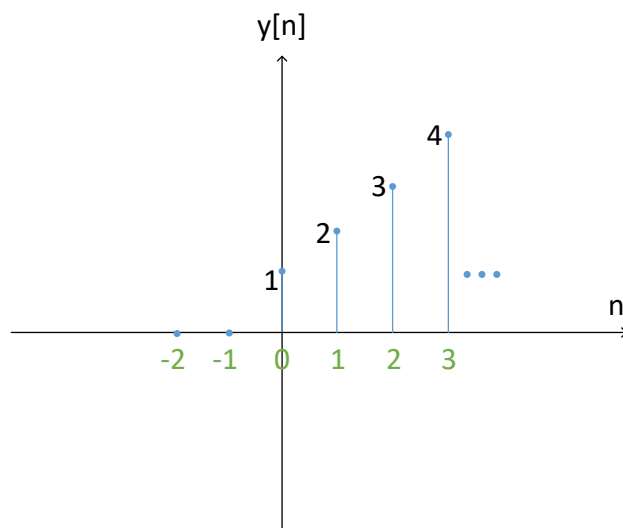# Homework Solution No. 2

1. Find and sketch $y[n] = x[n] * h[n]$ for each of the following cases:

(1)

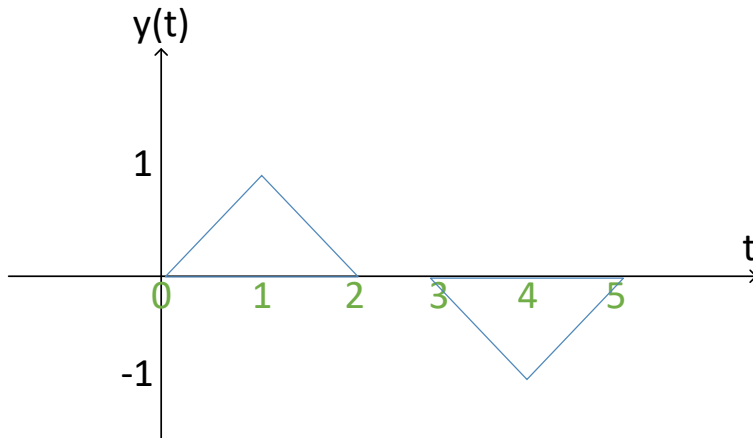$$y[n] = 2\delta[n+2] + \delta[n+1] - \delta[n] - 2\delta[n-2] - \delta[n-3] + \delta[n-4]$$

(2)

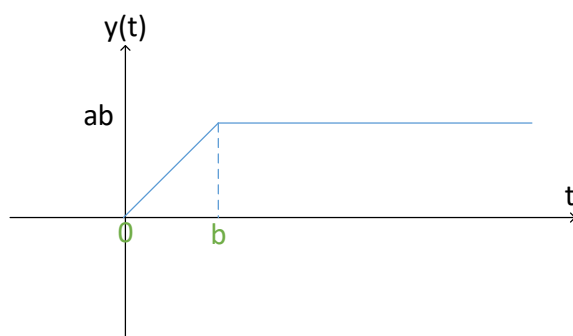$$y[n] = \begin{cases} n+1 \ ; & n \geq 0 \\ 0 & ; \ n < 0 \end{cases}$$

2. Consider a continuous-time linear time-invariant (LTI) system with the impulse response $h(t)$ and the input signal $x(t)$. Determine the output $y(t)$ for each of the following cases:

(1)

$$y(t) = \begin{cases} 0 & ; \quad t < 0 \\ t & ; \quad 0 \leq t < 1 \\ 2-t & ; \quad 1 \leq t < 2 \\ 0 & ; \quad 2 \leq t < 3 \\ 3-t & ; \quad 3 \leq t < 4 \\ t-5 & ; \quad 4 \leq t < 5 \\ 0 & ; \quad 5 \leq t \end{cases}$$

(2)

$$y(t) = \begin{cases} 0 & ; \quad t < 0 \\ at & ; \quad a \leq t < b \\ ab & ; \quad b \leq t \end{cases}$$