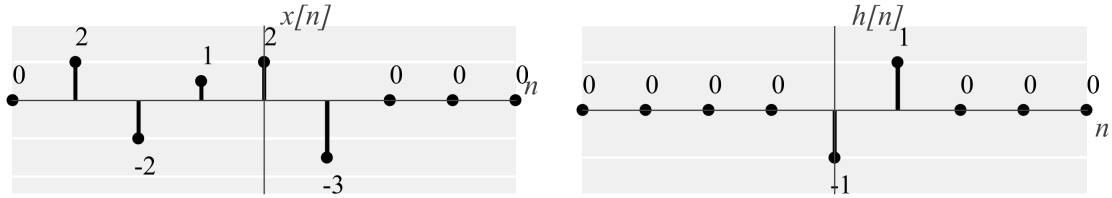**ECE 3500 (Fall 2016) − Examples #5**

**Question #1:**   Consider the following signal discrete-time signal $x[n]$ and LTI system with impulse response $h[n]$. Assume the zeros continue forever for $n \to -\infty$ and $n \to \infty$.
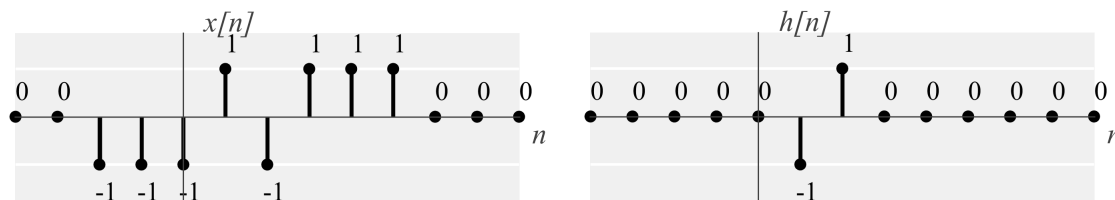
(a) Sketch the system output $y[n] = x[n] * h[n]$.

(b) Sketch $y[n] = h[n] * h[-n]$.

(c) Is the system with impulse response $h[n]$ causal? Is it memoryless?

**Question #2:** Consider the following discrete-time signal $x[n]$ and LTI system with impulse response $h[n]$. Assume the zeros continue forever for $n \to -\infty$ and $n \to \infty$.



(a) *(4 pts)* Sketch the system output $y[n] = x[n] * h[n]$.

(b) *(4 pts)* Sketch $y[n] = h[n] * h[-n]$.

(c) *(2 pts)* Is the system with impulse response $h[n]$ causal? Is it memoryless?