Problem 7.1: Perform the convolution $y[n] = x[n] * g[n]$, where $x[n]$ and $g[n]$ are shown in Figure 1. Stem-plot $y[n]$ with a straightedge. Label all axes and important features. Show the origin for context.

Problem 7.2: Shown in Figure 2 is an input $w[n]$ to an LTI system with impulse response $h[n] = \left(\frac{1}{2}\right)^n u[n]$. Determine the output of the system of $y[n]$. Stem-plot $y[n]$ with a straightedge. Label all axes and important features. Show the origin for context.

Problem 7.3: Suppose the input to the LTI system in Figure 2 was $\delta[n+1] - \delta[n-1]$ instead of $w[n]$. Determine an expression for the output of the system.

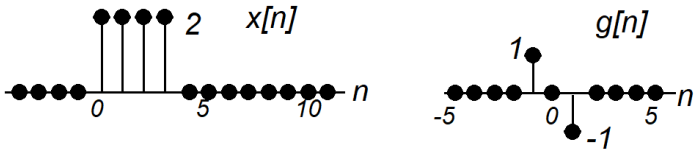

Figure 1

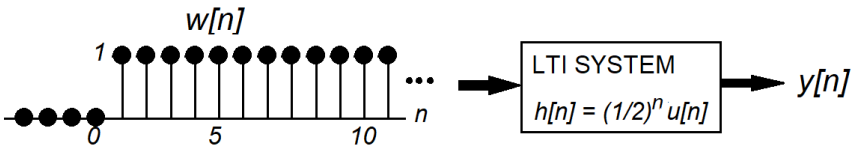

Figure 2

Optional, but testable, problems: From the textbook, Problems 2.3, 2.4, 2.6, 2.21.