

EECS 360
Lab 4: Discrete Convolution

1. Perform convolution for the following cases using the Matlab function “conv”. For each case, create a figure with 3 subplots: $x[n]$, $h[n]$, and $y[n] = x[n] * h[n]$.

a) $x[n] = 1 \quad 0 \leq n \leq 4$
 $h[n] = 1 \quad -2 \leq n \leq 2$

b) $x[n] = 1 \quad 0 \leq n \leq 20$
 $h[n] = (1/2)^{n-1} \quad -10 \leq n \leq 10$

c) $x[n] = [0.5, \quad 0.5, \quad 0.5] \quad 0 \leq n \leq 2$
 $h[n] = [3.0, \quad 2.0, \quad 1.0] \quad 0 \leq n \leq 2$

d) $x[n] = 1 - 1.3e^{\left(\frac{n}{5}\right)} \quad -2 \geq n \geq 1$
 $h[n] = e^{(-0.7n)} \quad 0 \geq n \geq 4$

2. Convolve the signals given in part 1 **a** through **d** by hand. Compare the results with the ones obtained by using the conv function.