

Digital Signal Processing Assignment # 10

1. Find the circular convolution of the following sequences
 - (a) $x(n) = [1, 5, 2, 6]$, $h(n) = [1, 0, 0, 1]$
 - (b) $x(n) = [1, -1, -1, 1, -1, 1]$, $h(n) = [1, 2, 3, 3, 2, 1]$
2.
 - (a) Find the DFTs, $X(k)$ and $H(k)$, of the two sequences in 1(a).
 - (b) Verify that $X(k)H(k)$ equals to the DFT of the circular convolution of the two sequences in 1(a).
3. Consider two sequences, $x(n) = [1, 5, 2, 3, 6]$, $h(n) = [2, 3, 0, 3, 2]$. Find the circular convolution of their DFTs.
4. If the DFT of $x(n)$ is $X(k) = [5, 2, 3, 1, 0, 4]$. Find the DFT of $y(n) = x(n - 2)_6$.