

EE 451

Homework #4

Due September 14, 2001

1. Problem 2.72. Use MATLAB to plot the first 20 points of the impulse response.
2. Problem 3.11.
3. Problem 3.15. Hint: the problem is easy if you write the sines and cosines in exponential form.
4. Problem 3.17.
5. Problem 3.23.
6. Problem 3.25.
7. Compute the eight-point circular convolution of the following sequences:
 - (a) $x_1(n) = \{1, 1, 1, 1, 0, 0, 0, 0\}$
 $x_2(n) = \sin\left(\frac{3\pi}{8}n\right) \quad 0 \leq n \leq 7$
 - (b) $x_1(n) = \left(\frac{1}{4}\right)^n \quad 0 \leq n \leq 7$
 $x_2(n) = \cos\left(\frac{3\pi}{8}n\right) \quad 0 \leq n \leq 7$
8. Repeat Problem 7 finding $X_1[k]$ and $X_2[k]$, multiplying them together, then taking the inverse DFT. Use MATLAB to find the DFT's and inverse DFT.