

Applied Algebra, Homework 5

Due Monday, February 24

1. Compute the circular convolution $f * g$ of the signals f and g in $\ell_{\mathbb{C}}[\mathbb{Z}/3\mathbb{Z}]$, expressed in the standard basis as $\vec{f} = [1 \ 2 \ 3]^t$ and $\vec{g} = [-2 \ 1 \ 4]^t$.
2. Consider the filter given by $I - S$, where S is the shift operator, for signals with $N = 4$ sample points. How does this act on the basic waveform E_3 ? And how does it act on the signal $e_2 + e_3$.