

Exercises Week 9

DSP

The remaining exercises from Week 8:

4. Consider a periodic signal $x[n]$ with period $N = 5$ and the DFT coefficients:

$$X_k = [15.0000 + 0.0000i, -2.5000 + 3.4410i, -2.5000 + 0.8123i, -2.5000 - 0.8123i, -2.5000 - 3.4410i]$$

Write $x[n]$ as a sum of sinusoids.

5. Find the DFT coefficients of the periodic signal with period $\{1, 1, 0, 0\}$, and write the signal as a sum of sinusoidal components.
6. Find the DTFT of the signal $\{1, 1, 0, 0\}$, considering it is surrounded with infinitely-long zeros on both sides