

EXERCISE 8.9: Use the results of Section 8-5.2, Exercise 8.8 to determine a formula for $X[k]$, the 40-point DFT of $x[n]$ in (8.43). Use 40 points of $x[n]$ taken over the period $0 \leq n \leq 39$. Verify that some of the nonzero DFT values are

$$X[k] = \begin{cases} 0.06115(40)e^{j1.5077} & k = 2 \\ 0.1471(40)e^{j1.8769} & k = 4 \\ 0.2442(40)e^{-j0.1852} & k = 5 \\ 0.0681(40)e^{-j1.4488} & k = 16 \\ 0.0236(40) & k = 17 \end{cases} \quad (8.44)$$

Determine the other nonzero values of $X[k]$, and also how many DFT coefficients $X[k]$ are equal to zero.

