Full Name: _____

EEE 5502 (Fall 2022) – Practice **Discrete Fourier Transform, 2022**

Question #1: Consider the length-4 signal $x[n]$ with values

$$\{1 \quad 1 \quad 0 \quad 0\}$$

(a) Compute the length-4 discrete Fourier transform (DFT) of $x[n]$ to get $X[k]$.

(b) Sketch the length-4 magnitude of the DFT $|X[k]|$.

(c) Sketch the length-4 phase of the DFT $\angle X[k]$.

Question #2: Consider the length-4 signal $y[n]$ with values

$$\{1 \quad 0 \quad 0 \quad 1\}$$

(a) Compute the length-4 discrete Fourier transform (DFT) of $y[n]$ to get $Y[k]$.

(b) Sketch the length-4 magnitude of the DFT $|Y[k]|$.

(c) Sketch the length-4 phase of the DFT $\angle Y[k]$.

(d) Explain the similarities and differences between $|X[k]|$ from the previous problem, $|Y[k]|$, $\angle X[k]$ from the previous problem, and $\angle Y[k]$.