

Lecture 22 RAT: 11/15/05, O/S/B Sections 8.4-8.5

1. Name _____
2. T/F For finite length signals it is necessary to know $X(e^{j\omega})$ at *all* frequencies in order to recover the time signal $x[n]$.
3. T/F The DFT is unrelated to the DT Fourier Transform (DTFT).
4. T/F Oppenheim, Schafer and Buck use the notation $((n))_N$ to denote $(n \text{ modulo } N)$.
5. T/F The DFT analysis equation is

$$X[k] = \sum_{n=0}^{N-1} x[n]W_N^{kn}.$$

IN-CLASS #3

CONSIDER THE SIGNAL $x[n]$ SHOWN BELOW;

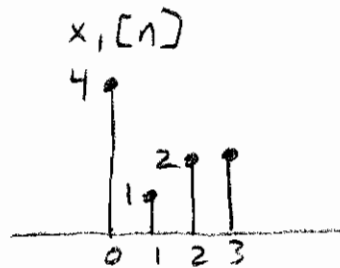


THE VALUE OF $x[4]$ IS
THE UNKNOWN CONSTANT b
(b NOT NECESSARILY SHOWN
TO SCALE)

$$X(e^{j\omega}) = \text{DTFT OF } x[n]$$

$$X_1[k] = X(e^{j\omega}) \Big|_{\omega = \frac{\pi}{2}k} \quad 0 \leq k \leq 3$$

$$x_1[n] = \text{4-PT INVERSE DFT OF } X_1[k]$$



BASED ON THIS PLOT, CAN YOU DETERMINE WHAT
 b IS?