

PROBLEM:

A signal composed of sinusoids is defined by an equation that uses the Fourier Series *synthesis* notation:

$$x(t) = \sum_{k=-3}^3 jke^{j\pi kt}$$

- (a) Sketch the spectrum of this signal indicating the complex amplitude of each frequency component. Label the complex amplitude value at the appropriate frequencies.
- (b) Is $x(t)$ periodic? If so, what is the fundamental period?
- (c) Determine the DC value of $x(t)$, i.e., the average value over one period: $\frac{1}{T_0} \int_0^{T_0} x(t) dt$.