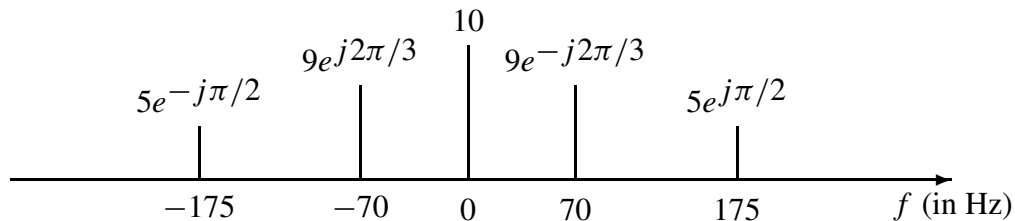


PROBLEM:

A signal $x(t)$ has the two-sided spectrum representation shown below.



- Write an equation for $x(t)$.
- Is $x(t)$ a periodic signal? If so, what is its period?
- Prove that any real-valued sinusoid such as

$$y(t) = A \cos(\omega_0 t + \phi)$$

has a spectrum consisting of two components: one in negative frequency and one in positive frequency. Determine the complex amplitudes (Z_k) that go with each spectral component.

Hint: use the identity $\Re\{z\} = \frac{1}{2}(z + z^*)$