

Sampling Example

Consider the signal

$$x(t) = 25 \cos(2\pi(1000)t + \theta) + 10 \cos(6000\pi t + \phi)$$

which is sampled at $f_s = 2500$ Hz to obtain $x[n] = x(n/f_s)$.

- Is there any aliasing present?
- What are the principle alias frequencies, in Hz, present in $x(t)$ relative to the given sampling frequency?
- Find the corresponding $\hat{\omega}$ for each of the principle alias frequencies of $x(t)$
- Sketch the amplitude line spectra plot of $x(t)$ along with the principle alias spectral lines, to make it clear where aliasing is present