

(a) Suppose that the input x(t) is given by

PROBLEM:

 $x(t) = 10 + 10\cos(2\pi(2000)t - \pi) + 8\cos(2\pi(7000)t - 3\pi/4)$

Determine the spectrum for x[n] when $f_{si} = 10000$ samples/sec. Make a plot for your answer, making sure to label the frequency, amplitude and phase of each spectral component.

- (b) Using the discrete-time spectrum from part (a), determine the analog frequency components in the output y(t) when the sampling rate of the D-to-C converter is $f_{so} = 10000$ Hz.
- (c) Again using the discrete-time spectrum from part (b), determine the analog frequency components in the output y(t) when the sampling rate of the D-to-C converter is $f_{so} = 20000$ Hz. In other words, the sampling rates of the two converters are different.