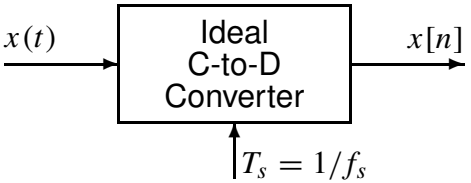
**PROBLEM:**




(a) Suppose that the discrete-time signal $x[n]$ is given by the formula

$$x[n] = 79\cos(0.4\pi n - \pi/4)$$

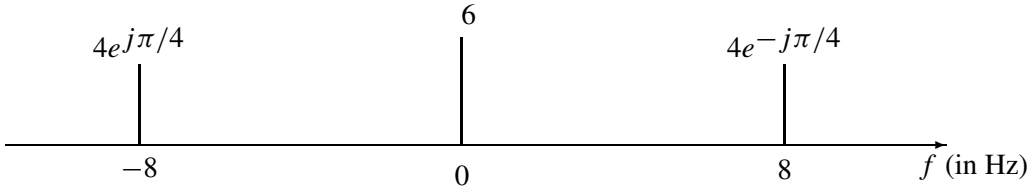
and the continuous-time signal $x(t)$ is given by

$$x(t) = 79\cos(72\pi t - \pi/4)$$

Determine two different sampling rates (in samples/second), so that $x[n] = x(nT_s)$ is true.

$f_{s1} =$ Hz $\qquad$ $f_{s2} =$ Hz

(b) If the input $x(t)$ is given by the two-sided spectrum representation shown below,




Determine the spectrum for $x[n]$ when $f_s = 10$ samples/sec. Make a plot for your answer, but label the frequency, amplitude and phase of each spectral component.

Use $\hat{\omega}$ for digital freq.