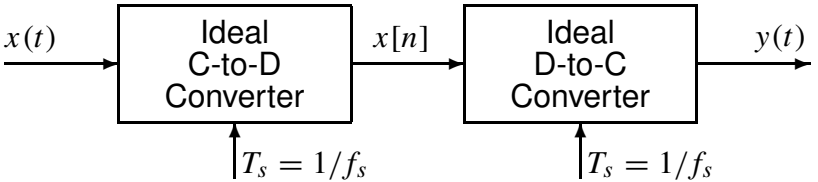
PROBLEM:



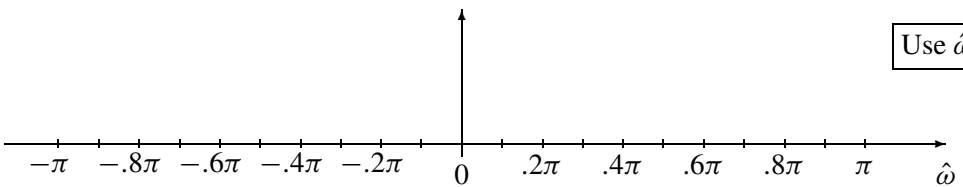
Suppose that the continuous-time input $x(t)$ to the above system is given as

$$x(t) = \cos(14000\pi t) + \cos(2000\pi t) + \cos(1000\pi t).$$

(a) What sampling rate is required such that no aliasing occurs for $x(t)$? $f_s =$

(b) Given that $f_s = 12,000$ samples/second, plot the frequency spectrum for $x[n]$.

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



(c) Given that $x(t) = \cos(25000\pi t$ and $f_s = 10000$ samples/second, write a simplified expression for the output $y(t)$ in terms of cosine functions.