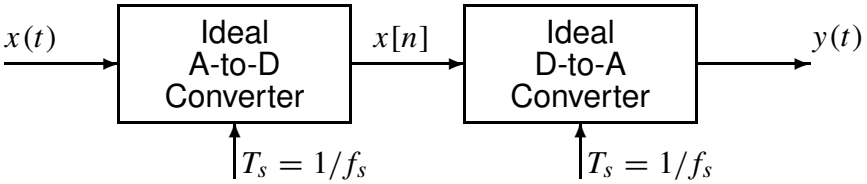
PROBLEM:

Consider the following system.



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

$$x[n] = 14\cos(0.14\pi n - \pi/7)$$

If the sampling rate is $f_s = 8000$ samples/second, determine the output signal that will be heard. Give a formula for $y(t)$.

(b) If the input $x(t)$ is given by the chirp formula

$$x(t) = \cos(5000\pi t^2) \qquad \text{for } 0 \le t \le 2$$

determine the output signal that will be heard when $f_s = 8000$ samples/sec. Give a plot of instantaneous frequency versus time for $y(t)$.