PROBLEM:

The input to the C-to-D converter in Fig. 1 is

$$x(t) = 4 + \cos(250\pi t - \pi/4) - 3\cos[(2000\pi/3)t]$$

The system function for the LTI system is

$$H(z) = \frac{1}{3}(1 + z^{-1} + z^{-2})$$

If $f_s = 1000$ samples/second, determine an expression for y(t), the output of the D-to-C converter.



Figure 1: Analog Filter implemented via a digital filter.