Figure 1: Given $x$, sketch $y$.

**EECS20N, Quiz 2, 9/27/99**

The quiz will count as one homework. It will take 15 minutes. Do your calculations on the sheet and put a box around your answer.

Please print your name here:

Last Name ___________________________ First ______________________________

1. The signal $x: \text{Reals} \rightarrow \text{Reals}$ is sketched in Figure 1.

   (a) In the space provided carefully sketch the signal $y$, where
   \[
   \forall t, \quad y(t) = \sum_{k=-\infty}^{\infty} x(t - 2k).
   \]

   (b) Suppose $t$ is in seconds. The period of $y$ is \textbf{2 seconds}

2. The periodic signal $x: \text{Reals} \rightarrow \text{Reals}$ is given by
   \[
   \forall t, \quad x(t) = 2 \sin(2\pi 60t + \pi/4) + 0.5 \sin(2\pi 120t + \pi/8).
   \]

   (a) The period of $x$ in seconds is \textbf{1/60}

   (b) Suppose $x$ is input to a LTI system whose frequency response is

   \[
   H(\omega) = \begin{cases} 
   1, & \text{if } |\omega| \leq 2\pi 80 \text{rads/sec} \\
   0, & \text{otherwise}
   \end{cases}
   \]

   Let $y$ be the output signal. Then
   \[
   \forall t, \quad y(t) = 2 \sin(2\pi 60t + \pi/4)
   \]