PROBLEM:

A non-ideal D-to-C converter takes a sequence y[n] as input and produces a continuous-time output y(t) according to the relation

$$y(t) = \sum_{n=-\infty}^{\infty} y[n]p(t - nT_s)$$

where $T_s = 0.001 = 10^{-3}$ second. The input sequence is given by the formula

$$y[n] = \begin{cases} \frac{1}{5}(n+1) & 0 \le n \le 4\\ (0.5)^{(n-4)} & 5 \le n \le 9\\ 0 & \text{otherwise} \end{cases}$$

- (a) Plot y[n] versus n.
- (b) For the pulse shape

$$p(t) = \begin{cases} 1 & -0.0005 \le t \le 0.0005 \\ 0 & \text{otherwise} \end{cases}$$

carefully sketch the output waveform y(t) over its non-zero region.

(c) For the pulse shape

$$p(t) = \begin{cases} 1 - 1000|t| & -0.001 \le t \le 0.001 \\ 0 & \text{otherwise} \end{cases}$$

carefully sketch the output waveform y(t) over its non-zero region.