1. Find Fourier series coefficients for the following periodic signals.
   a. Triangular wave
   b. Fully rectified sine
   c. Half wave rectified sine
   d. Train impulse

2. Suppose $f(t)$ is a continuous, periodic function with period $T$. Show that
   \[ \frac{1}{T} \int_0^T |f(t)|^2 \, dt = \sum_{n=1}^{\infty} |c_n|^2, \]
   Where $c_n$ are the coefficients in the Fourier series expansion of $f(t)$. This called Parseval’s Theorem or Parseval equality.

   Consider the following periodic function with period $T$:
   \[ f(t) = \frac{2t}{T}, 0 \leq t < T \]
   Show that
   \[ \sum_{n=1}^{\infty} \frac{1}{n^2} = \frac{\pi^2}{6} \]