Homework Assignment:

1. Sound Pressure Levels of White and Pink Noise
   a. Generate two vectors of white and pink noise.
      i. Find the RMS of each and scale one of the vectors so that they have the same RMS.
   b. Calculate the sound pressure level in dB of each signal.
   c. Calculate the A- and C-weighted sound pressure levels (in dB) of each signal.
   d. Filter the white and pink noise signals in the octave bands from 125-4000 Hz using 3rd order Butterworth filters
   e. Calculate the overall sound pressure level, as well as the A- and C-weighted levels for each octave band, and plot on a Level vs. Octave band plot.
      i. Be sure to format your Level vs. Octave plot so that the data is presentable. I recommend treating it like a Line plot with markers.
      ii. Plot on a semilog axis the FFTs of the noise and A- and C-weighted noise (one plot per noise profile).
      iii. Do your Level vs. Octave plots match the plots of the FFTs? Why or why not?