Matlab Instructions

What to do!

1. Do some of the tutorials! Matrix math and plotting for sure.
2. Waves travel with both a wavelength and a frequency in time, these can be plotted in time steps to show a traveling wave - and can also be summed with other waves to create interesting standing waves and interference patterns.

   The following steps will help to create and visualize traveling and standing waves.

   - Create an array x of 100 points
   - Iterate i (time) for n time steps (for loop) - 100-1000
   - Set t = 0.1*i
   - Using $y = A\sin(\beta x - \omega t)$, $\beta = 2 * \pi/\lambda$ and $\omega = 2\pi f$ with f being the frequency. Calculate y at each time step and plot using : plot(x,y); pause(0.1);
   - Start with $\lambda = 5$ and $f = 0.5$.
   - Try different values of wavelength and frequency, and amplitude.
   - Create and plot a second wave traveling in the opposite direction
   - Plot also the sum of both waves using a slightly different frequency for the second wave.
   - Play with the second wave use a different wavelength, frequency, Amplitude, and direction
   - Use the help command for finding out information on a command such as "axis" or any other information that you want.

3. Bonus: write a program that uses the rand function to calculate an approximate value of π.