In this lab, you will be evaluating limits by graphing functions and visually interpreting the graphs.

1. Complete each of the following for functions $a, b$

   - Graph the function. You will be creating more than one figure. Be sure to tell MATLAB that you want to create a new figure each time rather than just erasing your old figure and replacing it with a new figure. **Hint: See Lab 1 and figure and linspace generates a linearly spaced vector**
   - Title your graph to denote which function is graphed. Be sure to use a string when necessary. Putting an apostrophe on either side of your word or phrase lets MATLAB know that you are giving it a string. **Hint: title**
   - Choose appropriate x and y intervals to evaluate the limits visually. **Hint: xlim and ylim**
   - Have the limit actually print out in the command window. **Hint: disp**

   Note that you do not need to evaluate the limits algebraically!

   **Functions:**
   - $a(x) = \frac{\sin(x)}{x}$
     \[ \lim_{x \to 0} a(x) \]  
   - $b(x) = \frac{x^2 + 8x + 15}{2x + 3}$
     \[ \lim_{x \to -3} b(x) \]  
   - $c(x) = \frac{\tan^2(x) + 1}{\sec^2(x)}$
     \[ \lim_{x \to \frac{\pi}{2}} c(x) \]

2. Plot the following three functions on the same graph to determine the limit listed below. Again, display the appropriate limit by using disp in your code. **Hint: hold on hold off**

   - $f(x) = x$
   - $g(x) = -x$
   - $h(x) = x \sin\left(\frac{1}{x}\right)$
   - $\lim_{x \to 0} h(x)$

3. Email me an m file with only the correct script necessary to create each of your graphs.