NOTE: Use non-engineering format for problem 1 and engineering format for problems 2 through 5. This is an individual assignment.

1. Learn more about deionized water by exploring the web. Write a paragraph or two describing in your own words what you have learned. Your discussion should address the uses of DI water and how DI water is made. List the websites or other sources you used for your discussion.

2. How many grams of salt would you need to add to 5 gallons of water to create a concentration of 0.1 weight percent NaCl? 18.95g

3. What electrical current (in amps) would be required to convert one mole of H$_2$O molecules to hydrogen gas and hydroxide over 20 hours? Assume that the reaction provided in class at the cathode is the final result (subsequent reactions do not occur in the solution). 1.34A

4. How many Cl$^-$ ions would exist in your fishtank if the salt concentration was 0.1% by weight? Assume that the fishtank is 1.6 inches in diameter and 2 inches deep, that the NaCl is fully hydrated, and that the density of the water is unchanged due to the presence of the salt (since the salt concentration is very low). 6.8(10)$^{20}$

5. Use the salinity sensor calibration data collected in class 4 to complete the problem below:
   a. Provide a table of the salt concentration and the output of your Arduino program (as read from LCD). Be sure to include the units for salt concentration in your column headers.
   b. Show a plot of sensor output vs. salt concentration that includes a trendline, an equation and R$^2$. The sensor output should be the dependent variable and the salt concentration should be the independent variable.
   c. Use algebra to manually invert the equation generated in part (b).