Acids and Bases Review Sheet

1) Explain how the Lewis definition of a base is different from that of the Arrhenius definition of a base. Are Arrhenius bases also bases under the Lewis definition? Explain.

2) Determine the Bronsted-Lowry conjugate acid-base pairs in each of the following equations:

- $H_2SO_4 + H_2O \rightarrow HSO_3^{-1} + H_3O$

- $Ca(OH)_2 + 2\ HNO_3 \rightarrow Ca(NO_3)_2 + 2\ H_2O$

- $NaCl \rightarrow Na^+ + Cl^-$

3) An unknown compound is dissolved in water. If the solution has a blue color, tastes sour, is slippery in texture, and does not conduct electricity, is it most likely an acid, a base, or neutral? Explain.

4) What's the pH of a 0.0034 M HBr solution?

5) What's the pH of a 3.3×10^{-5} M NaOH solution?

6) What's the pH of a 4.5×10^{-11} M HCl solution?

7) The solution from problem 6 actually has a pH of 7.00. Explain how this can be.

8) Find the pH of a 0.0050 M acetic acid solution. $K_a = 1.8 \times 10^{-5}$

9) If it takes 560 mL of 0.0050 M NaOH to neutralize 100.0 mL of HCl solution with unknown concentration, what was the original pH of the HCl solution?