Weak Acid Practice Problems

Solve the following problems by writing the full equilibrium reaction, solving an equilibrium table, and checking any assumptions you may have made. Some will require the use of the quadratic formula. You may use a calculator to solve quadratic equations.

1. What is the pH of a 0.35M HCN solution? The Ka for HCN is 6.5×10^{-10}.

2. The Ka for acetic acid is 1.75×10^{-5}. What is the H^+ and pH of a 0.10M solution of acetic acid in water?

3. What is the pH of some formic acid (HCOOH) whose original concentration was 0.50M? The Ka for formic acid is 1.772×10^{-4}.

4. What is the pH of a solution of HOCl whose original concentration was 0.25M if the Ka is 3.5×10^{-8}?

5. What is the pH of some H_2S that is 0.10M with a Ka of 1.0×10^{-7}?

The following problems are the same but something has been altered about each one just to make you think.

6. What is the percent ionization for some 0.10M acetic acid. See problem #2.

7. Find and label all the concentrations for the species in equilibrium in some 0.10M HNO_2. Ka = 7.2×10^{-5}

8. What is the pH of a 0.10M HF solution. Ka is 6.5×10^{-4}.

9. Chlorous acid has a formula of $HClO_2$. It's pKa is 1.92. What is the pH of a 0.50M solution.

10. The percent dissociation of some 1.00M acetic acid is 0.42%. What is the value of Ka for acetic acid. you can check your answer with data given in problem #2.

The following is really tricky. Try it but don't be heart broken if you can't get it without help.

11. What is the pH of some 0.25M NaCN. See problem 1 for details.