1. Refer to the data you obtained earlier (Acids, Bases, and pH, pg. 55). Compare the pH and $[H^+]$ of $H_2SO_4$ with that of $HCl$ and $HNO_3$. How do you account for any differences?

2. $H_2SO_4$ is a polyprotic acid. What does this term mean? Write the equations which describe the step-wise dissociation of $H_2SO_4$.

3. Carbonic acid, $H_2CO_3$, is a diprotic acid.
   a. Write the two dissociation reactions showing its diprotic behavior.
   
   b. If the initial concentration of $H_2CO_3$ is 0.100 M, calculate $[H^+]$. In your calculation, assume only the first dissociation occurs. (Note: The equilibrium constant for the first dissociation, $K_{a1}$, is $4.3 \times 10^{-7}$.)
c. Now consider the second dissociation equation for which $K_{a2} = 5.6 \times 10^{-11}$. What is the initial concentration of $[\text{HCO}_3^-]$? What is the initial concentration of $[\text{H}^+]$? Calculate the final $[\text{H}^+]$ assuming the second dissociation occurs.