Chapter 14 Homework

1. Complete the following chart comparing acids and bases

| | Acids | Bases |
|---------------------------------------|-------|-------|
| How do they taste? | | |
| What ion do they produce in water? | | |
| What color do they turn litmus paper? | | |
| Give two examples of each | | |
| What is their pH range? | | |

2. Complete and balance the following acid-base reactions

$$KOH + HNO_3 \rightarrow$$

$$HF + Ba(OH)_2 \rightarrow$$

$$Al(OH)_3 + H_2SO_4 \rightarrow$$

$$Ca(OH)_2 + H_3PO_4 \rightarrow$$

| 3. | A | 7.50 mL | sample | of H ₃ PO | 4 is titrated | with 0 |).109 M N | NaOH. | If it takes | 34.1 m | L of |
|----|----|----------|-----------|----------------------------------|---------------|--------|-----------|--------|----------------------------------|--------|------|
| Na | OH | to neutr | alize the | H ₃ PO ₄ , | what is the | conce | ntration | of the | H ₃ PO ₄ ? | | |

$$H_3PO_4 + 3NaOH \rightarrow Na_3PO_4 + 3H_2O$$

4. If it takes 25 mL of 0.050 M HCl to neutralize 345 mL of NaOH solution, what is the concentration of the NaOH solution?

$$HCl + NaOH \rightarrow H_2O + NaCl$$

5. If it takes 52 mL of 0.57 M KOH solution to completely neutralize 125 mL of sulfuric acid solution (H_2SO_4), what is the concentration of the H_2SO_4 solution?

$$2KOH + H_2SO_4 \rightarrow 2 H_2O + K_2SO_4$$

6. Complete the following chart

| | [H ₃ O ⁺] | [OH ⁻] | рН | Acidic, Basic, or Neutral? |
|---|----------------------------------|------------------------|------|-------------------------------|
| a | | | | |
| | 1.5 x10 ⁻⁴ | | | |
| b | | 6.4 x 10 ⁻³ | | |
| С | | | | |
| | | | 11.7 | |
| d | | | | |
| | | | 3.4 | |
| е | | | | |
| | | | | neutral |