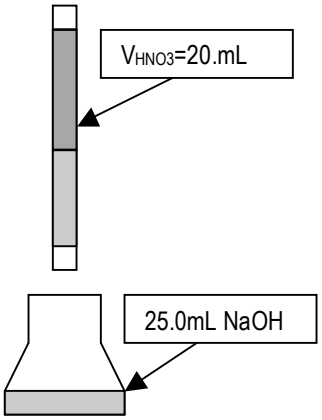
Practice problems 7b

(1) Write down the balanced chemical equation for the following neutralization reaction between potassium hydroxide and phosphoric acid:

(2) Titration of 25.0 mLs of NaOH requires 20.0 mLs of 0.500 M HNO_3 to reach the equivalence point. Answer the following questions:
a) What is the concentration of NaOH, [NaOH] ? _____



b) If instead of adding only 20.0 mLs of the HNO_3 you add 25.0 mLs (i.e. you exceed the equivalence point by 5.0 mLs), what is the [HNO_3] in the resulting solution in the flask? (hint: don't forget to take into account the change in volume)

c) If instead of adding 20.0mLs of the HNO_3, you add 15.0mLs (i.e. you do not reach the equivalence point), what is the resulting [NaOH] remaining in solution?

3) The salt calcium sulfate is sparing soluble in water with a solubility of 0.209 g/100mL of water at 30°C. If you stirred 0.455 g of $CaSO_4$ (136.1 g/mol)in 50.0 mls of water,
a) what would the resulting molarity be for the solution? [2 pts]

b) How many grams of $CaSO_4$ would remain undissolved? [2 pt]

4) Titration of a 25.0 mL HCl solution requires 16.5 mLs of a .210 M NaOH solution to reach the end point. What is the concentration of the HCl solution?

5) Titration of 32.0 mLs of citric acid ($H_3C_6H_5O_7$, a triprotic acid, 192.1 g/mol) requires 28.4 mLs of .160 M NaOH solution.
a) Write the balanced equation for the titration reaction:

b) Determne the molarity of the citric acid solution? _____ M

c) How many grams of citric acid are initially present in the solution being titrated?

d) What is the molarity of NaOH in the solution if you overshot the endpoint by 5.00 mLs?