1. A buffer contains 0.1 mol acetic acid and 0.13 mol potassium acetate in 1.00 L. a) What is the pH of this buffer. b) What is the pH of the buffer after the addition 0.02 mol of KOH? (CH₃COOH, $K_a = 1.8 \times 10^{-5}$).

2. The $K_{sp}$ for LaF₃ is $2 \times 10^{-19}$. What is the solubility of LaF₃ in water in grams per liter?

3. Will Ag₂SO₄ ($K_{sp} = 1.5 \times 10^{-5}$) precipitate when 100 mL of 0.050 M AgNO₃ is mixed with 10 mL of $5.0 \times 10^{-2}$ M Na₂SO₄ solution?

4. If it takes 42.53 mL of NaOH to react with 1.00 g of potassium hydrogen phthalate (KHP; KHC₈H₄O₄), what is the concentration of NaOH?