Buffers Formative Quiz

In preparation for your Buffers lab please answer the following questions.

1. Determine the number of grams of sodium fluoride, NaF, that must be added to 100. mL of 1.0 M hydrofluoric acid, HF, to create a buffered solution with a pH of 3.05? Assume that the volume does not change. \(K_a = 7.2 \times 10^{-4}\).

2. Determine the number of grams potassium hypochlorite, KOCI, that must be added to 250. mL of 0.50 M hypochlorous acid, HOCl, to create a buffered solution with a pH of 8.00? Assume that the volume does not change. \(K_a = 3.5 \times 10^{-8}\).

3. Determine the volume, in milliliters, of 1.0 M NaOH that would need to be added to 75.0 mL of 0.50 M benzoic acid, \(C_6H_5COOH\) to produce a buffered solution with a pH of 4.25. \(K_a = 6.5 \times 10^{-5}\).

4. Determine the volume, in milliliters, of 0.50 M HCl that would need to be added to 100. mL of 0.50 M NH\(_3\) to produce a buffered solution with a pH of 9.50. \(K_b = 1.8 \times 10^{-5}\).