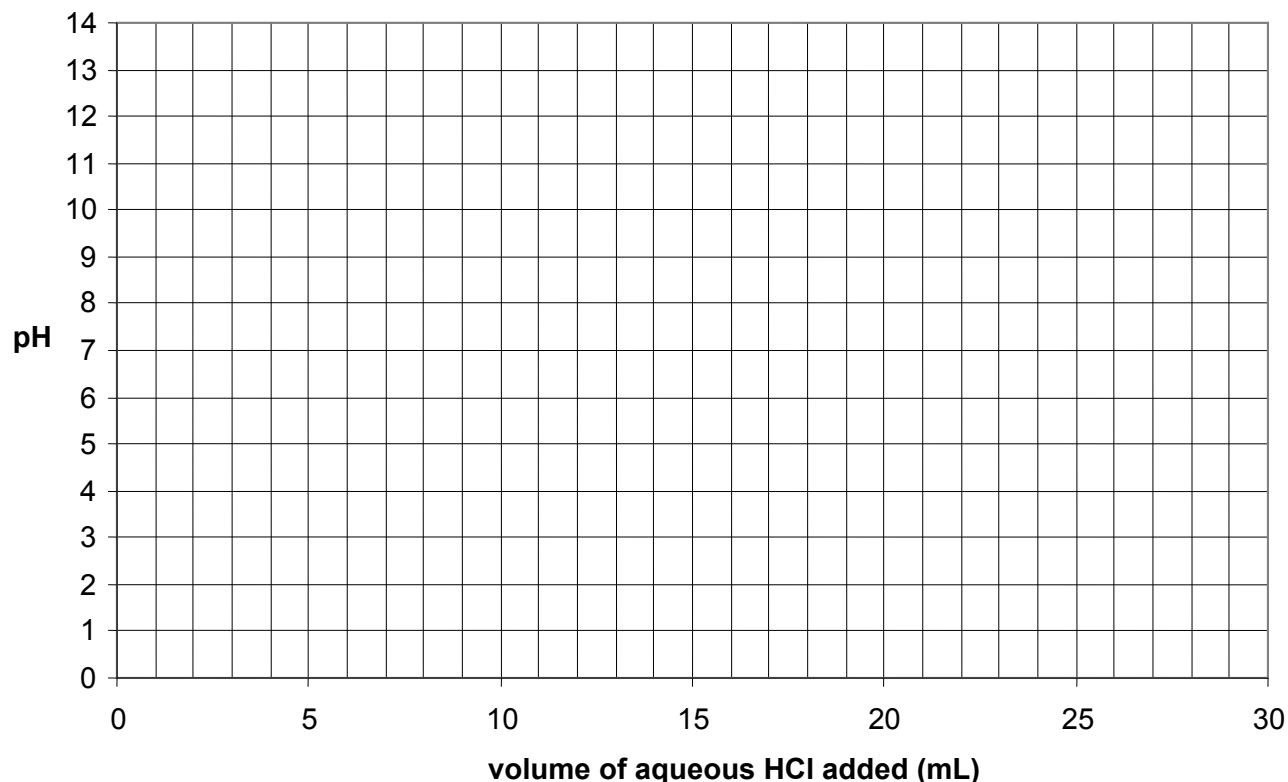


Additional Practice Exercise: Titration of a Weak Base with a Strong Acid

A 20.00-mL sample of 0.1000 M $\text{N}(\text{CH}_2\text{CH}_3)_3$ will be titrated with 0.1000 M HCl. The K_b for $\text{N}(\text{CH}_2\text{CH}_3)_3$ is 5.3×10^{-4} , so the K_a of $\text{HN}(\text{CH}_2\text{CH}_3)_3^+$ is $(1.0 \times 10^{-14})/(5.3 \times 10^{-4}) = 1.9 \times 10^{-11}$, and $\text{p}K_a = 10.72$.

Sketch and annotate the expected shape of the titration curve.



Now calculate the expected pH after the following volumes of 0.1 M HCl(aq) are added:

- 0 mL
- 10.00 mL
- 15.00 mL
- 19.00 mL
- 19.95 mL
- 20.00 mL
- 20.05 mL
- 25.00 mL
- 30.00 mL

Mark your answers to a-i on the grid below (next page), and draw a smooth curve passing through these points corresponding to what you would for this titration. Circle the "buffer region."

