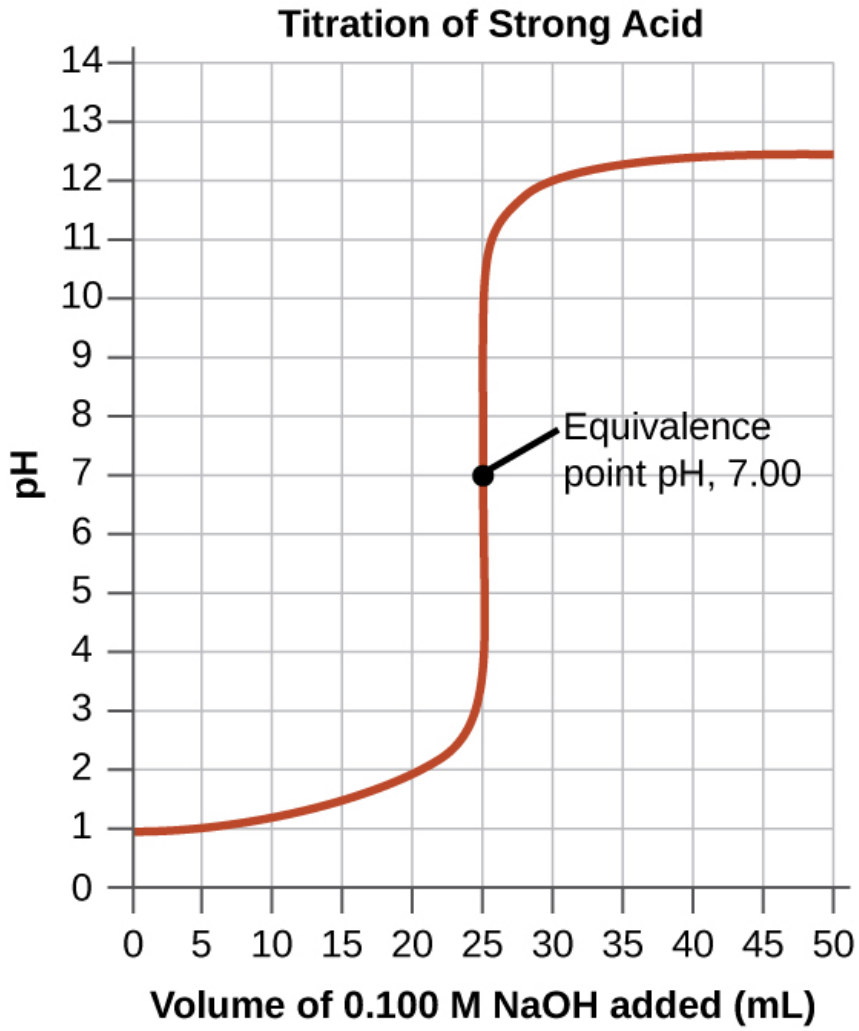


Analyte: 25.0 mL of 0.100 M HCl

Titrant: 0.100 M NaOH

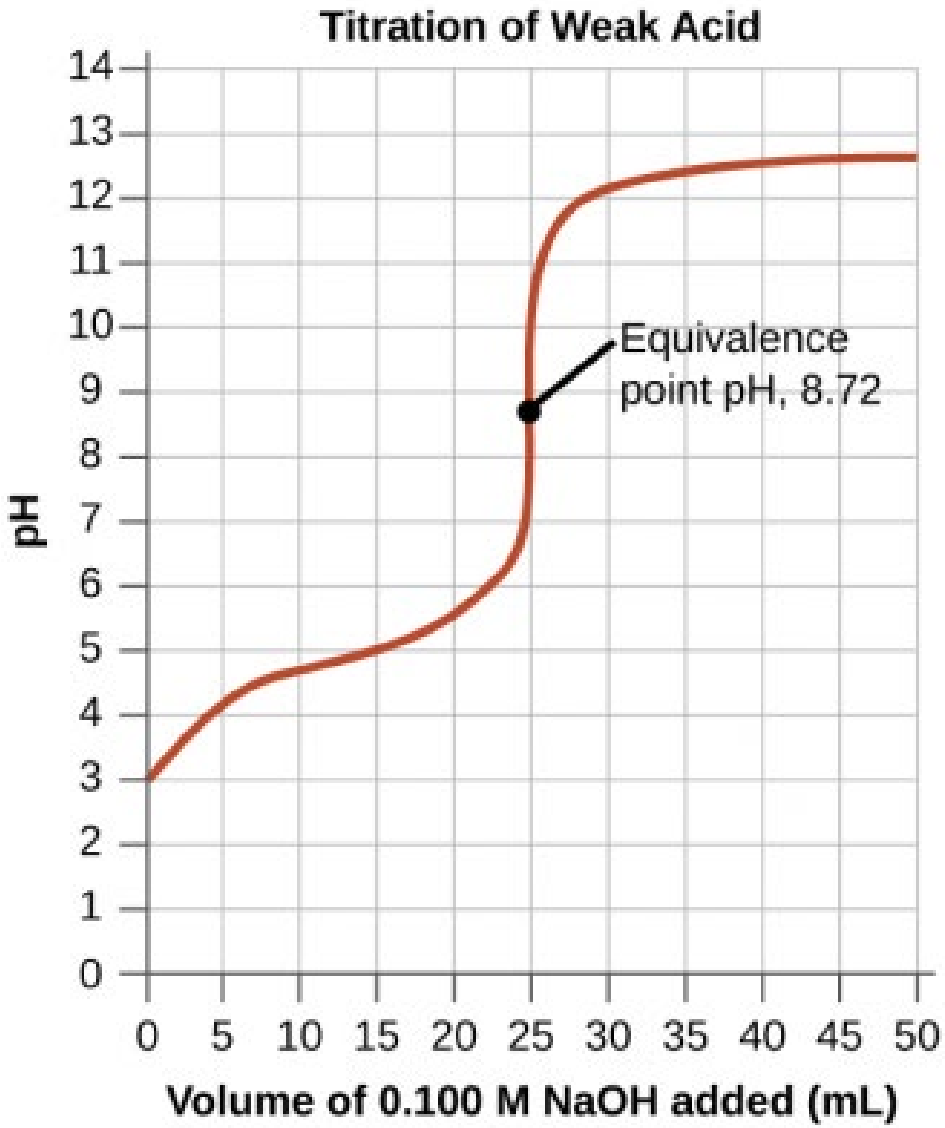
Strong Acid–Strong Base Titration Example Problem

- Use stoichiometry to determine moles of acid or base
- Determine concentration in titration flask, pH = -log[H_3O^+]

A 50.0 mL sample of 0.200 M sodium hydroxide is titrated with 0.200 M nitric acid.

a. Calculate the pH when 25.0 mL of nitric acid is added.

b. Calculate the pH when 75.0 mL of nitric acid is added.



Analyte: 25.0 mL of 0.100 M acetic acid

Titrant: 25.0 mL of 0.100 M NaOH

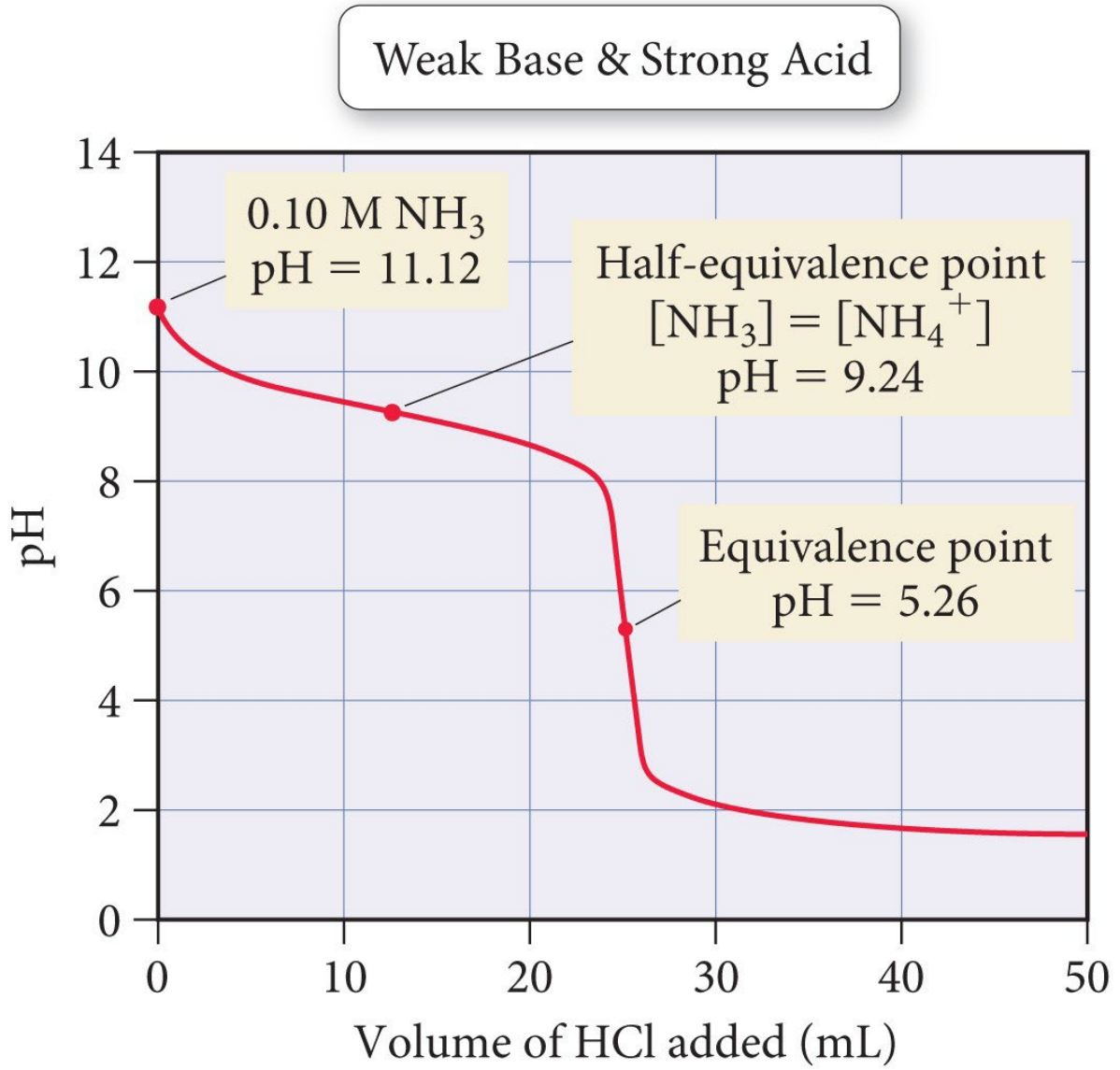
Example : **Weak Acid–Strong Base Titration pH Curve**

A 40.0 mL sample of 0.100 M HA (a generic monoprotic weak acid) is titrated with 0.200 M KOH. Ka for HA is $4.6\ 10^{-6}$. Calculate :

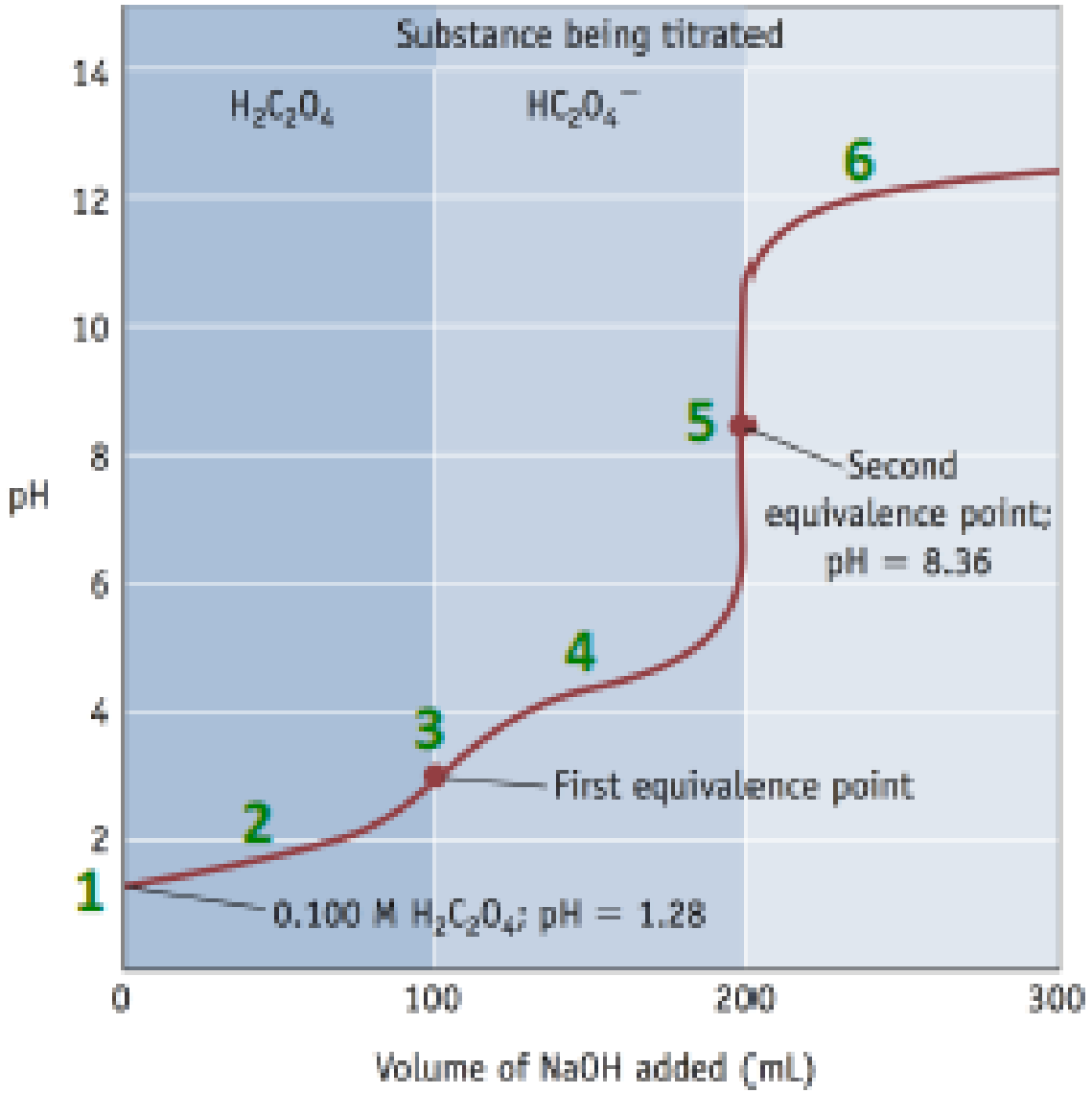
a. the volume required to reach the equivalence point
b. the pH after adding 5.00 mL of KOH
c. the pH at one-half the equivalence point
d. the pH at the equivalence point
e. pH after 40.0 mL of KOH is added

$$\mathrm{pH} = \mathrm{p}K_{\mathrm{a}} + \log\frac{[\mathrm{base}]}{[\mathrm{acid}]}$$

Titration Curve of a Weak Base with a Strong Acid



Titrate 100. mL of 0.100 M oxalic acid ($H_2C_2O_4$) with **0.100 M NaOH**



Titration of sodium carbonate