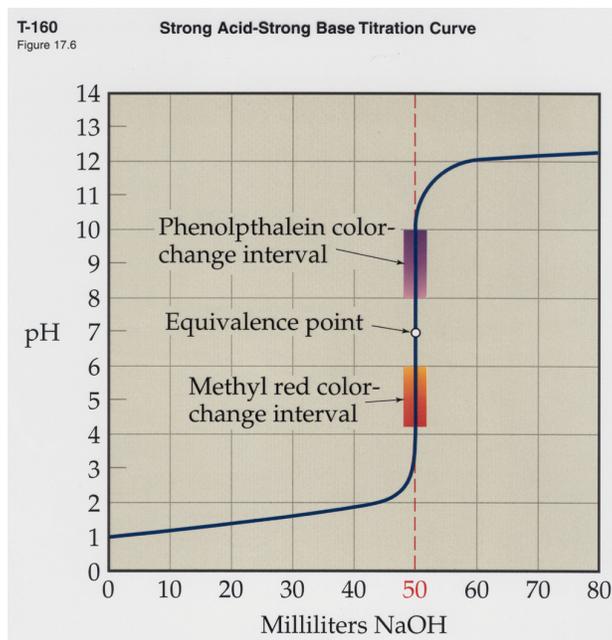


Titrating Weak Acids and Bases

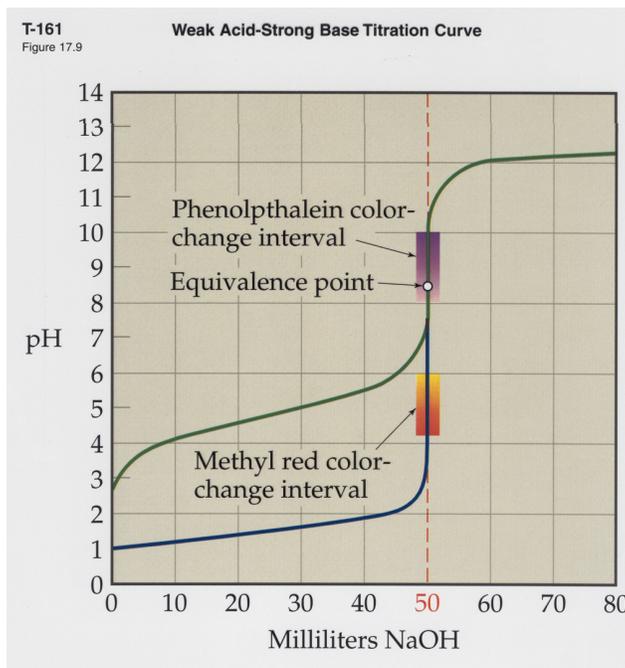
Titrating Weak Acids and Bases

Titration Curve for a Strong Acid



Titrating Weak Acids and Bases

Weak Titrations



Titrating Weak Acids and Bases

Summary

Weak Equilibrium Titration

	Initial	Before Equiv.	At Equiv.	After Equiv.
Strong A ₁ B	Equal to the concentration of the original solution	Equal to the concentration of the unreacted ion. Found by subtracting. Remember volume changes	7	Equal to the concentration of the unreacted ion. Found by subtracting. Remember volume changes
Equilibrium A ₁ B	Equal to the ion [conc] of the original equilibrium solution. (ICE Box)	Equal to the ion [conc] of the unreacted particle after it is allowed to reach an adjusted equilibrium. (IRACE Box). Remember volume changes	Not 7 due to the hydrolysis of water by the resulting salt ions. Can be calculated using K_a or K_b values of the conjugate ions from the salts	Equal to the concentration of the unreacted ion. Found by subtracting. Remember volume changes

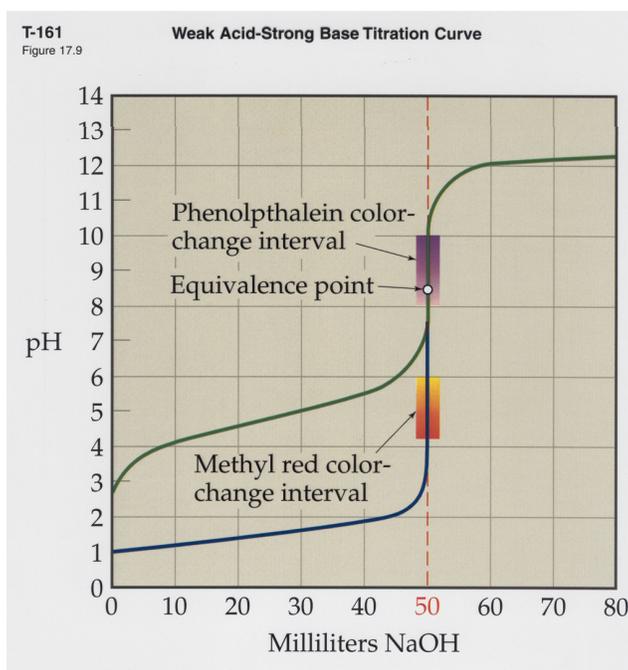
Titrating Weak Acids and Bases

Sample Calculations

- A titration begins with 50.0ml of 0.100 M $\text{HC}_2\text{H}_3\text{O}_2$ is setup for titration. What is the initial pH? ($K_a = 1.8 \times 10^{-5}$)

Titrating Weak Acids and Bases

Weak Titrations



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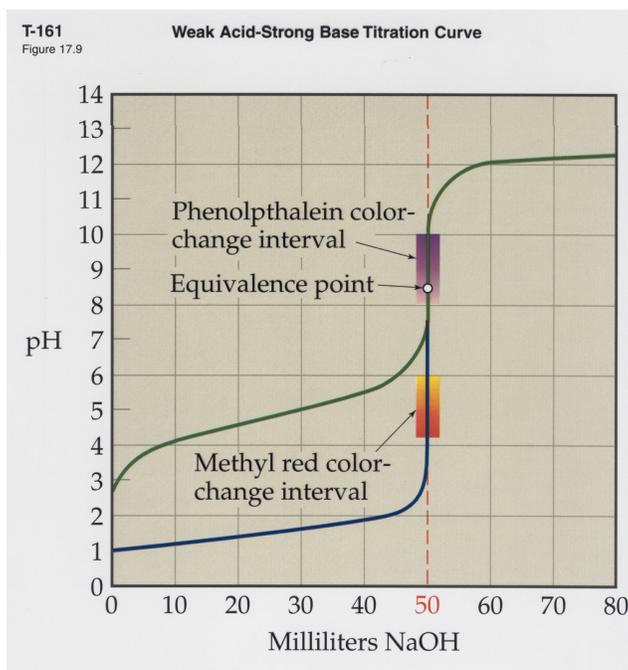
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Titrating Weak Acids and Bases

Weak Titrations



Titrating Weak Acids and Bases

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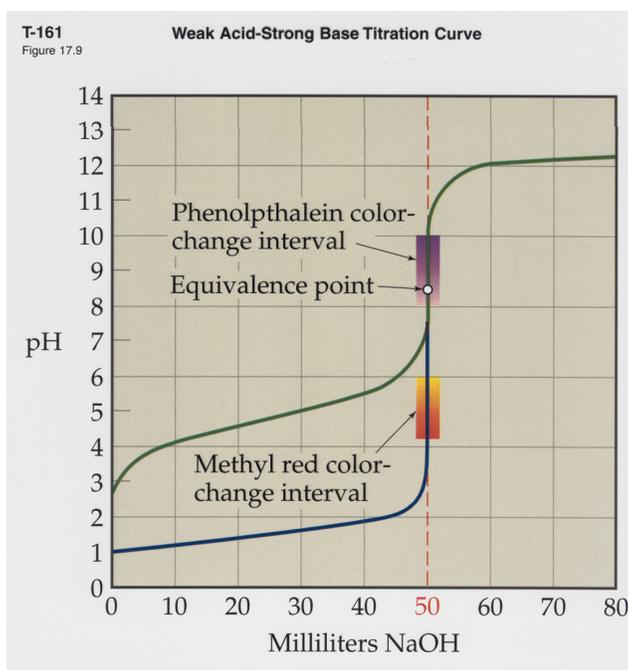
Titrating Weak Acids and Bases

Sample Calculations

- Calculate the pH at the equivalence point in the titration of 50.0 mL of 0.100 M $\text{HC}_2\text{H}_3\text{O}_2$ with 0.100 M NaOH

Titrating Weak Acids and Bases

Weak Titrations



Titration Weak Acids and Bases

Sample Calculations

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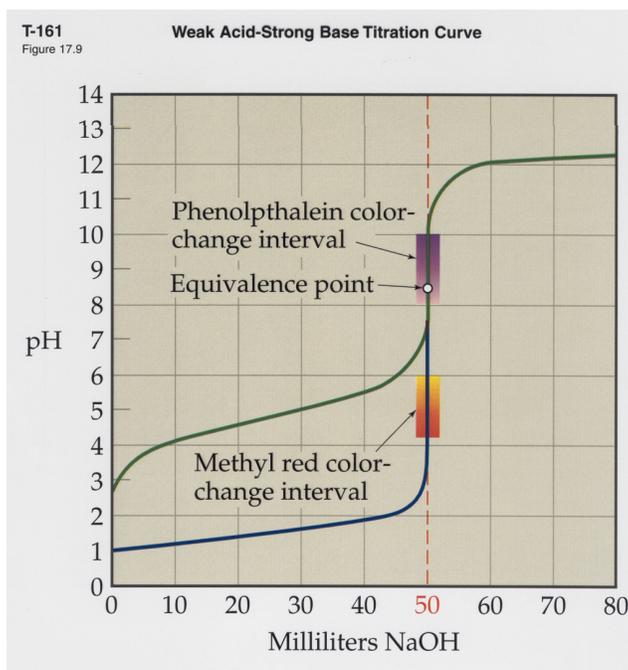
Titration Weak Acids and Bases

Sample Calculations

- What would the calculation look like then additional NaOH is added beyond equivalence?

Titrating Weak Acids and Bases

Weak Titrations



Titrating Weak Acids and Bases

Homework

- 17.7 / 17.45 a,c,d,e / 17.46 a,c,d,e / 17.47a,b