

Weak Acid – Strong Base & Strong Acid – Weak Base Titrations

1. A Student plotted a titration curve using formic acid (HCOOH) with NaOH. The student started by placing 15.00 mL of 0.150 M HCOOH in a beaker and titrated the acid with 0.100 M NaOH in the buret.

Draw a rough sketch of what the titration curve might look like:

What is the pH of the solution after the addition of 5.00 mL of NaOH?

What is the pH after 10.00 mL of NaOH?

What is the pH after 15.00 mL of NaOH?

When does the equivalence point occur? What is the pH at the equivalence point?

How much NaOH needs to be added to reach the point where pH equals pK_a ? What is the pH at this point?

2. A student plotted a titration curve using ammonia with nitric acid. The student started by placing 25.0 mL of 0.150 M NH_3 in a beaker and titrated the base with 0.200 M HNO_3 in the buret.

Draw a rough sketch of what the titration curve might look like:

What is the pH of the solution after the addition of 5.00 mL of HNO_3 ?

What is the pH after 10.00 mL of HNO_3 ?

What is the pH after 15.00 mL of HNO_3 ?

When does the equivalence point occur? What is the pH at the equivalence point?

How much HNO_3 needs to be added to reach the point where pH equals pK_a ? What is the pH at this point?