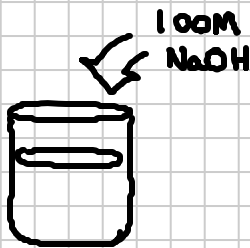


Titration of a weak acid with a strong base:

Note Title

3/7/2010



500 mL
0.100 M
CH₃COOH

Determine the solution's pH when 60.0 mL of NaOH are added.

60 mL NaOH --- past equivalence pt

moles NaOH > moles CH₃COOH

$$\text{CH}_3\text{COOH} : \text{moles} = 0.500 \text{ L} \times 0.100 \text{ M} = 0.0500 \text{ mole CH}_3\text{COOH}$$

$$\text{NaOH} : \text{moles} = 0.060 \text{ L} \times 1.00 \text{ M} = 0.0600 \text{ mole NaOH}$$

XS NaOH det. the pH of solution...

$$\begin{array}{r} 0.0600 \text{ mol NaOH} \\ - 0.0500 \text{ mol CH}_3\text{COOH} \\ \hline 0.0100 \text{ mol XS NaOH} \\ \text{OH}^- \quad \text{Na}^+ \end{array}$$

$$[\text{OH}^-] = \frac{\text{mole OH}^-}{V} = \frac{0.0100 \text{ mol}}{0.560 \text{ L}} = 0.017857 \text{ M}$$

$$\text{pOH} = -\log(0.017857 \text{ M}) = 1.748$$

$$\text{pH} = 14 - \text{pOH} = 12.25$$