

Today Sections 16.6-16.9

lab expt. 7 Quiz over expt 6

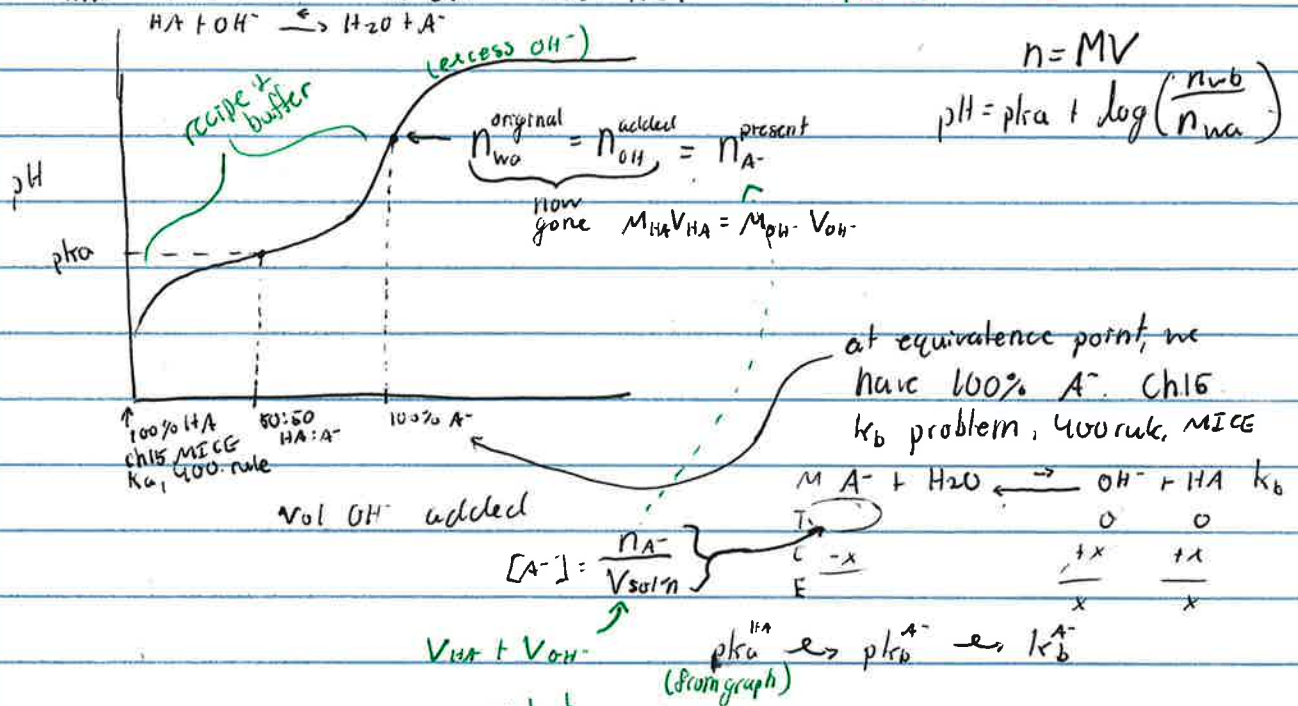
no class Friday

0.10g NaF and 0.20g HF ^{has to be LR} buffer - recipe 1

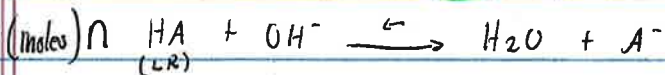
0.020 mol HC₂H₃O₂ + 0.024 mol NaOH ~~recipe 2~~ recipe 2, not buffer

35mL 0.10M HClO + 20mL 0.40M NaClO Recipe 1 buffer

25mL 1.0M NaF + 10.0mL 1.0M HCl Recipe 3 buffer



if we add excess OH^- (past eq pt)



I 0.0025 0.0030

C -0.0025 -0.0025

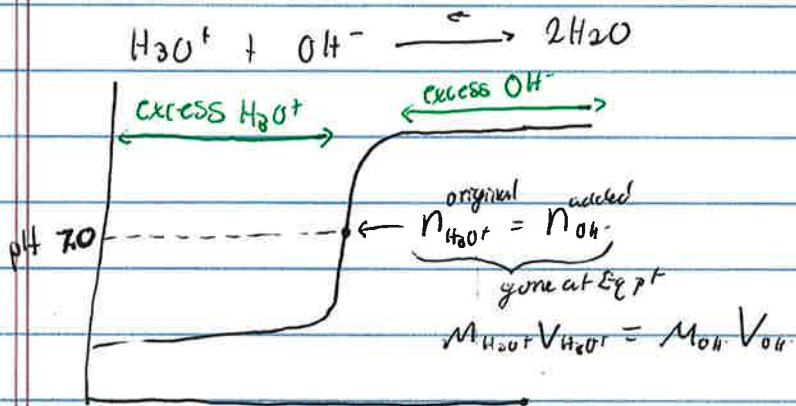
E 0 0.0005

$$[OH^-] = \frac{n_{OH}}{V_{sol'n}} = \frac{0.0005}{0.086L} = 5.9 \times 10^{-3} M$$

$$pOH = -\log 5.9 \times 10^{-3} = 2.23$$

$$pH = 14 - 2.23 = 11.77$$

Titration of 0.10M HA and we used 25.00mL. After adding 50.00mL of 0.050M OH^- we are at eq pt. Now if 60.00mL of 0.050M OH^- what is the pH?



vol OH^- added

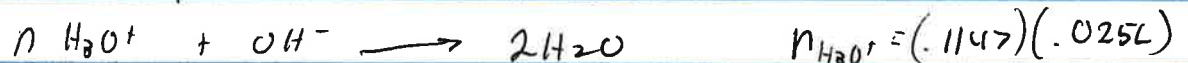
Suppose we titrate 25.00 mL 0.1147 M $\text{HNO}_3(\text{aq})$ with $\text{NaOH}(\text{aq})$.
Suppose it takes 17.22 mL to reach equiv pt (end point).
What is the $[\text{OH}^-]$?

$$M_{\text{H}_3\text{O}^+} V_{\text{H}_3\text{O}^+} = M_{\text{OH}^-} V_{\text{OH}^-}$$

$$(0.1147 \text{ M H}_3\text{O}^+) (\cancel{25.00} 26.00 \text{ mL}) = M_{\text{OH}^-} (17.22 \text{ mL})$$

$$M_{\text{OH}^-} = .167 \text{ M}$$

What is the pH after 14 mL of ~~14~~ OH^- added?



$$I \quad .00287 \text{ mol} \quad \cancel{.00287} \quad .00163$$

$$C \quad \underline{.00163} \quad \underline{.00163} \quad - .00163$$

$$E \quad \cancel{.00124} \quad 0$$

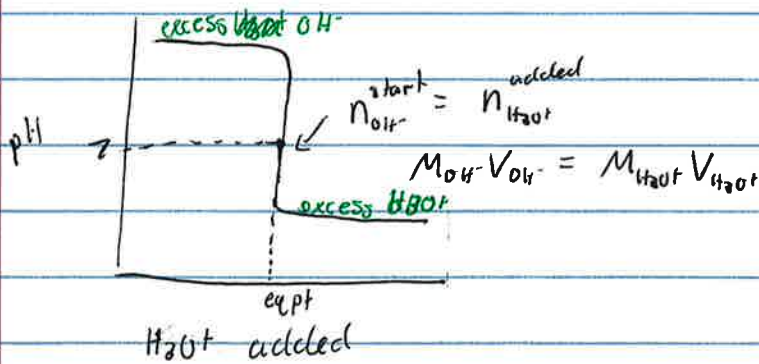
$$n_{\text{OH}^-} = (.1665 \text{ M})(.014 \text{ L})$$

$$[\text{H}_3\text{O}^+] = \frac{n_{\text{H}_3\text{O}^+}}{V_{\text{sol}}} = \frac{.000124 \text{ mol}}{0.03966 \text{ L}} = 0.0317 \text{ M}$$

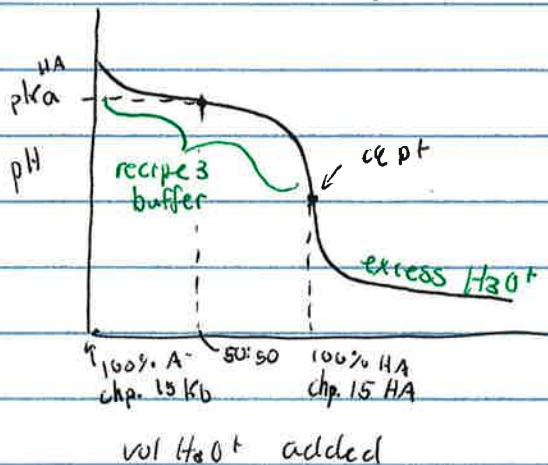
$$= \cancel{.00163} \quad .00163 \text{ mol}$$

$$\text{pH} = \log 0.0317 \text{ M}$$

$$\text{pH} = 1.50$$

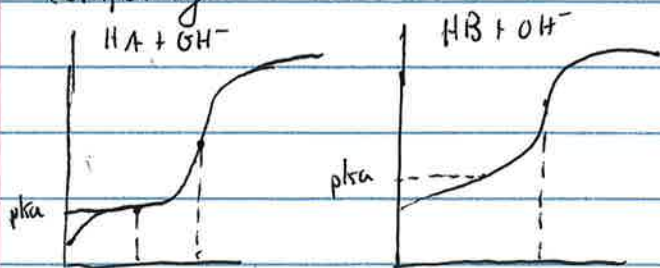


wb + ~~80~~ H_3O^+



$$pH = pKa + \log\left(\frac{n_{wb} - n_{H_3O^+}}{0 + n_{H_3O^+}}\right)$$

Comparing 2 titrations



which is stronger?
 HA is stronger since
 it has a smaller pKa.

Sol'n 1 of HA with 1 M OH⁻

Sol'n 2 of HA with 1 M OH⁻

