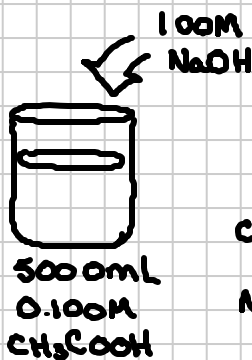


Titration of a weak acid with a strong base:

Note Title

3/7/2010



Determine the pH at the 1/2 equivalence point.

1/2 NaOH req. equiv point (50.00 mL NaOH)

1/2 equiv. point : @ 25.00 mL NaOH

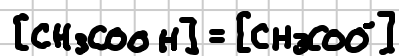
$$\text{CH}_3\text{COOH: moles} = 0.500\text{L} \times 0.100\text{M} = 0.0500\text{mol}$$

$$\text{NaOH: moles} = 0.025\text{L} \times 1.00\text{M} = 0.0250\text{mol}$$



neut. moles,	0.0500 mol	—	—	0 mol
shift	-0.0250 mol			+0.0250
moles:	0.0250 mol			0.0250 mol

← equal # moles →



H.H. equation:

$$\text{pH} = \text{pK}_a + \log \frac{[\text{base}]}{[\text{acid}]}$$

$$[\text{base}] = [\text{acid}]$$

@ 1/2 equiv. pt

$$\text{pH} = \text{pK}_a + \log 1$$

$$\text{pH} = \text{pK}_a$$

$$\text{pH} = -\log(1.8 \times 10^{-5}) = 4.74 \quad @ \text{ 1/2 equiv. point.}$$