

(17.27) 0.1 mole  $\text{HOAc}$  + 0.13 mole  $\text{NaOAc}$  in 1L

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

$= -\log(1.8 \times 10^{-5}) + \log \frac{0.13}{0.1} = 4.86$

PH Plain Buffer

Mar 9-8:13 AM

② Add 0.02 mole  $\text{KOH}$ . + 0.13  $\text{NaOAc}$  + 0.1 mole  $\text{HOAc}$

Add SB

Next Moles

BATTLE = RICE

	$\text{HOAc}$	+ $\text{KOH}^-$	$\Rightarrow$	$\text{KOAc}^-$	+ $\text{H}_2\text{O}$
I	0.1	0.02		0.13	
$\Delta$	-0.02	-0.02		+0.02	
E	0.08 mole 0.08M			0.15 mole 0.15M	

③ Recalc. New M

③  $\text{pH} = -\log(1.8 \times 10^{-5}) + \log \frac{0.15}{0.08} = 5.02$

Mar 9-8:45 AM

① Add 0.02 mole  $\text{HNO}_2$  Add SA  $\rightarrow$  0.1 mole  $\text{HNO}_2$  0.13 mole  $\text{NaNO}_2$  Buffer

① Next mole

**BASE BATTLE = RICE**

$$\text{HNO}_2 + \text{NaNO}_2 \rightarrow \text{NaNO}_2 + \text{HNO}_2$$

I	0.02	0.13		0.10
$\Delta$	-0.02	-0.02		+0.02
E		0.11		0.12

② Recal M (1q)  $\rightarrow$  0.11M  $\text{NO}_2^-$  0.12M  $\text{HNO}_2$

③  $\text{pH} = -\log(1.8 \times 10^{-5}) + \log \frac{0.11}{0.12}$

**pH = 4.71**

Mar 9-8:52 AM

### Titration Curves

$\text{pH} \rightarrow$   
 \*  $\text{pH} > \text{pK}_a \rightarrow \text{EP}$   
 \*  $\text{pH}$  at Equivalence Point  
 \*  $\text{pH}$  before EP  
 $\rightarrow$  time  
 mL added  
 SB to SA  
 WB to SA

Mar 9-8:58 AM

Reagents moles A = moles B  
 $nM = nM$

① Find pH of a soln made by mixing  
 $30\text{ml } 0.1\text{M NaOH}$  +  $50\text{ml } 0.1\text{M HOAc}$

② Next using MOLES

I D E	HOAc	+ NaOH	→	NaOAc	+ HOH
	$5 \times 10^{-3}$	$3 \times 10^{-3}$		$3 \times 10^{-3}$	
	$-3 \times 10^{-3}$	$-3 \times 10^{-3}$		$+3 \times 10^{-3}$	
	$2 \times 10^{-3}$			$3 \times 10^{-3}$	
	0.08L			0.08L	

Recalc M  
 80ml

0.025M HOAc  
 WA

0.0375M OAc<sup>-</sup>  
 Split of WA

③  $\text{pH} = -\log(1.8 \times 10^{-5}) + \log \frac{0.0375}{0.025}$

HH  
 = 4.92

Balance

MOLES

MOLE RATIO

Mar 9-9:03 AM

HW  
 17/42  
 PS 17# 1-11

Mar 9-9:14 AM