

PS 17-1

① H_2Ac ~~Ac^-~~
WA Conj. base

Add SB OH^-

$\text{H}_2\text{Ac} + \text{OH}^- \rightarrow \text{Ac}^- + \text{H}_2\text{O}$

① Next steps
 ② Ratio M at EQ
 ③ HH or Rice pH

Add SA to water H^+

$\text{H}^+ + \text{Ac}^- \rightarrow \text{H}_2\text{Ac}$

$\text{H}_3\text{O}^+ + \text{Ac}^- \rightarrow \text{H}_2\text{Ac} + \text{H}_2\text{O}$

① Next steps
 ② Ratio M at EQ
 ③ HH / Rice pH.

Mar 9-7:41 AM

⑧ CH_3NH_3^+ \leftarrow More H (ACID)

\Rightarrow $\text{CH}_3\text{NH}_2 \rightarrow$ CB.

Mar 9-8:01 AM

(12) $KOH + HCl \rightarrow KCl + HOH$

45ml 0.183M 65ml 0.145M

	OH^-	H^+	\rightarrow	HOH	net ionic
I	0.008235	0.009425			
F	-0.008235	-0.008235			
F					

1.19 $\times 10^{-3}$ mole, H^+

0.119 = 1.08×10^{-2} M H^+

$pH = -\log [H^+] = 1.97$

5.675 moles #

People new M

Mar 9-8:06 AM

(14) $HIn \rightarrow H^+ + In^-$

$$K_a = \frac{[H^+][In^-]}{[HIn]}$$

$$\frac{K_a}{[H^+]} = \frac{[In^-]}{[HIn]}$$

$pH = 10$

$\frac{1 \times 10^{-12}}{1 \times 10^{-10}} = 1 \times 10^{-2}$

0.01

Mar 9-8:14 AM

$\text{CaF}_2 \rightarrow \text{Ca}^{+2} + 2\text{F}^-$
 $x \qquad \qquad \qquad 2x$
 $K_{sp} = [\text{Ca}^{+2}][\text{F}^-]^2$
 $3.9 \times 10^{-11} = (x)(2x)^2$
 $3.9 \times 10^{-11} = 4x^3$
 $x = 2.14 \times 10^{-4}$

$\text{PbCrO}_4 \rightarrow \text{Pb}^{+2} + \text{CrO}_4^{-2}$
 $x \qquad \qquad \qquad x$
 $K_{sp} = [\text{Pb}^{+2}][\text{CrO}_4^{-2}]$
 $1.8 \times 10^{-14} = (x)(x)$
 $x = 1.37 \times 10^{-7}$

$\text{Ag}_3\text{AsO}_4 \rightarrow 3\text{Ag}^+ + \text{AsO}_4^{-}$
 $3x \qquad \qquad \qquad x$
 $K_{sp} = [\text{Ag}^+]^3[\text{AsO}_4^{-}]$
 $1.1 \times 10^{-20} = (3x)^3(x)$
 $= 27x^4$
 $x = 4.49 \times 10^{-6}$

1 CaF_2
 2 Ag_3AsO_4
 3 PbCrO_4

Mar 9-8:21 AM

(18) $\text{Ba}(\text{OH})_2 \rightarrow \text{Ba}^{+2} + 2\text{OH}^-$
 $x \qquad \qquad \qquad 2x$

$\text{pH} = 10$
 \downarrow
 $\text{pOH} = 4$
 \downarrow
 $[\text{OH}^-] = 1 \times 10^{-4}$

$[\text{Ba}^{+2}] = \frac{1}{2} [\text{OH}^-]$

0.5×10^{-4}
 5×10^{-5}

Mar 9-8:37 AM

(19)
$$pH = pK_c + \log \left(\frac{\text{base}}{\text{acid}} \right)$$

Fur⁻

HFur

$$= -\log(1.77 \times 10^{-4}) + \log \frac{0.01}{0.1}$$

Mar 9-8:44 AM

(21) (WA) HProp + KOH (SB)

25 ml, 0.147M + 35.31 ml, 0.104M

→ EQUIVALENCE PT.
Moles acid = Moles base.

HP _{rop}	+ OH ⁻	→	HP _{rop} ⁻	+ H ₂ O
I 3.675 × 10 ⁻³	3.675 × 10 ⁻³		0	0
Δ -	-		+	
E 0	0		3.675 × 10 ⁻³	0

New Moles

0.0605M Prop⁻

BASE

Prop ⁻	+ H ₂ O	→	HProp	+ OH ⁻
I 0.0605	0		0	0
Δ -x			+x	+x
E 0.0605-x			x	x

$K_b = \frac{x^2}{0.0605} = 7.46 \times 10^{-10}$

$x = 6.72 \times 10^{-6}$

$K_c \times K_b = K_w$
1.34 × 10⁻⁵ × 1 × 10^{-14}}

Mar 9-8:47 AM

⑥ $H_2O + H^+ \rightarrow H_3O^+$
 BASE (aq) Acid

⑨ $HNO_2 \rightleftharpoons H^+ + NO_2^-$

I	0.1	0	0
D	-x	+x	+x
E	0.1-x	x	x

$K_a = \frac{(x)(x)}{0.1-x} = 1.4 \times 10^{-5}$ $x = 0.00118$
 $x = 0.0012$

Part
 Whole = $\frac{0.0012}{0.1}$
 0.012

Mar 9-9:04 AM

⑩ pH = ? 0.5 M NO_2^- $K_a(HNO_2) = 4.5 \times 10^{-4}$

BASE

$NO_2^- + H_2O \rightleftharpoons HNO_2 + OH^-$

I	0.5	0	0
D	-x	+x	+x
E	0.5-x	x	x

$K_b = \frac{x^2}{0.5-x} = 2.22 \times 10^{-11}$

$x = 3.33 \times 10^{-6} = [OH^-]$

Mar 9-9:11 AM

#9 →
PS 17-2 Finish
Skin 12, 13

Mar 9-9:17 AM