

PS 17

① $\text{CaF}_2 \Rightarrow \text{Ca}^{2+} + 2\text{F}^-$
 $M \Rightarrow$ Ca^{2+} (x) F^- (2x)

$K_{sp} = [\text{Ca}^{2+}][\text{F}^-]^2$
 $3.9 \times 10^{-11} = (x)(2x)^2$
 $= 4x^3$
 $2.14 \times 10^{-4} \text{ M} = x$
 (9 F) (1)

$\text{PbCrO}_4 \Rightarrow \text{Pb}^{2+} + \text{CrO}_4^{2-}$
 $K_{sp} = [\text{Pb}^{2+}][\text{CrO}_4^{2-}]$
 $1.8 \times 10^{-14} = (x)(x)$
 $x = 1.34 \times 10^{-7} \text{ M}$ (3)

$\text{Ag}_3\text{AsO}_4 \Rightarrow 3\text{Ag}^+ + \text{AsO}_4^{3-}$
 $K_{sp} = [\text{Ag}^+]^3 [\text{AsO}_4^{3-}]$
 $1.1 \times 10^{-20} = (3x)^3 (x)$
 $= 27x^4$
 $4.49 \times 10^{-6} \text{ M} = x$ (2)

Mar 14-8:05 AM

PS 17

① $\text{Ba}(\text{OH})_2$ $\text{pH} = 10 \Rightarrow \text{pOH} = 4$
 self? \Rightarrow SB $[\text{OH}^-] = 1 \times 10^{-4}$

$\text{Ba}(\text{OH})_2 \rightarrow \text{Ba}^{2+} + 2\text{OH}^-$
 1×10^{-4}

$[\text{Ba}^{2+}] = \frac{1}{2} [\text{OH}^-]$
 $\rightarrow 0.5 \times 10^{-4}$
 5×10^{-5}

Mar 14-8:53 AM

(17.53) $PbI_2(s) \rightleftharpoons Pb^{2+} + 2I^-$

$M \Rightarrow X$ X $2x$

$K_{sp} = [Pb^{2+}][I^-]^2$ Molality = $\frac{Moles}{L}$

$K_{sp} = (1.17 \times 10^{-3})(2.34 \times 10^{-3})^2$

0.54g PbI_2	1 mole PbI_2
1L	461g PbI_2

$1.17 \times 10^{-3} M PbI_2$

Mar 14-8:58 AM

Before titration 99ml new volume

Print. ① 50ml 0.1M H_2Ac + 49ml 0.1M $NaOH$

$0.005 moles$ $0.0049 moles$

② Net $H_2Ac + NaOH \rightleftharpoons NaOAc + HOH$

I	0.005	0.0049		
Δ	-0.0049	-0.0049	+0.0049	
E	0.001		0.0049	

③ new M

$1.01 \times 10^{-3} M H_2Ac$ $4.94 \times 10^{-2} M OAc^-$

③ $pH = -\log(1.8 \times 10^{-5}) + \log \frac{4.94 \times 10^{-2}}{1.01 \times 10^{-3}}$

$pH = 6.43$

Mar 14-9:02 AM

50 ml 0.1M H_2Ac + 50 ml 0.1M NaOH .
 0.005 mols, 0.005 mols. (circled)

At Eq pt

① $\text{H}_2\text{Ac} + \text{OH}^- \rightarrow \text{Ac}^- + \text{H}_2\text{O}$

Mols	I 0.005	0.005		
Net	$\Delta -0.005$	-0.005	$+0.005$	
E	0	0	0.005	

② $\text{Ac}^- + \text{H}_2\text{O} \rightleftharpoons \text{H}_2\text{Ac} + \text{OH}^-$

H^+ acceptor

No H^+ or OH^- (circled)

0.18
0.05M Ac^- (circled)

Add H_2O (circled)

I	0.05			
Δ	$-x$		$+x$	$+x$
E	$0.05-x$		x	x

$K_b = \frac{(\text{H}_2\text{Ac})(\text{OH}^-)}{(\text{Ac}^-)} = 5.56 \times 10^{-10}$

$K_a \times K_b = K_w$

$\frac{(x)(x)}{0.05-x} = 5.56 \times 10^{-10}$

Mar 14-9:11 AM