

PSN (17)

$\text{CaF}_2(s) \rightarrow \text{Ca}^{2+} + 2\text{F}^-$

$K_{sp} = [\text{Ca}^{2+}][\text{F}^-]^2$

$3.9 \times 10^{-11} = (x)(2x)^2$

$x = 2.14 \times 10^{-4}$

①

$\text{PbCrO}_4 \rightarrow \text{Pb}^{2+} + \text{CrO}_4^{2-}$

$K_{sp} = [\text{Pb}^{2+}][\text{CrO}_4^{2-}]$

$1.8 \times 10^{-14} = x^2$

$x = 1.34 \times 10^{-7}$

③

$\text{Ag}_3\text{AsO}_4 \rightarrow 3\text{Ag}^+ + \text{AsO}_4^{3-}$

$K_{sp} = [\text{Ag}^+]^3[\text{AsO}_4^{3-}]$

$1.1 \times 10^{-20} = (3x)^3(x)$

$1.1 \times 10^{-20} = 27x^4$

$x = 4.5 \times 10^{-6}$

②

Mar 13-7:23 AM

E2 (4) 0.15M KF  $K_a = 7 \times 10^{-4}$

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

I	0.15			
Δ	-x		+x	+x
E	0.15-x		x	x

$K_b = \frac{(x)(x)}{0.15} = 1.43 \times 10^{-11}$

$x = 1.46 \times 10^{-6} = [\text{OH}^-]$

$\text{pOH} = -\log([\text{OH}^-]) = 5.83$

$\text{pH} + \text{pOH} = 14$

$\text{pH} = 8.17$

$K_a \times K_b = K_w$

Mar 13-7:49 AM

⑤

	$HX$	$\rightarrow$	$H^+$	$+ X^-$
I	0.01		0	0
D	-x		+x	+x
E	0.01-x		x	x

$K_a = \frac{(x)(x)}{0.01-x} =$

$pH = 5.24$

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

$-5.24 = \log[H^+]$

$[H^+] = 5.75 \times 10^{-6}$

Mar 13-7:54 AM

$K_2CO_3$

$\swarrow$

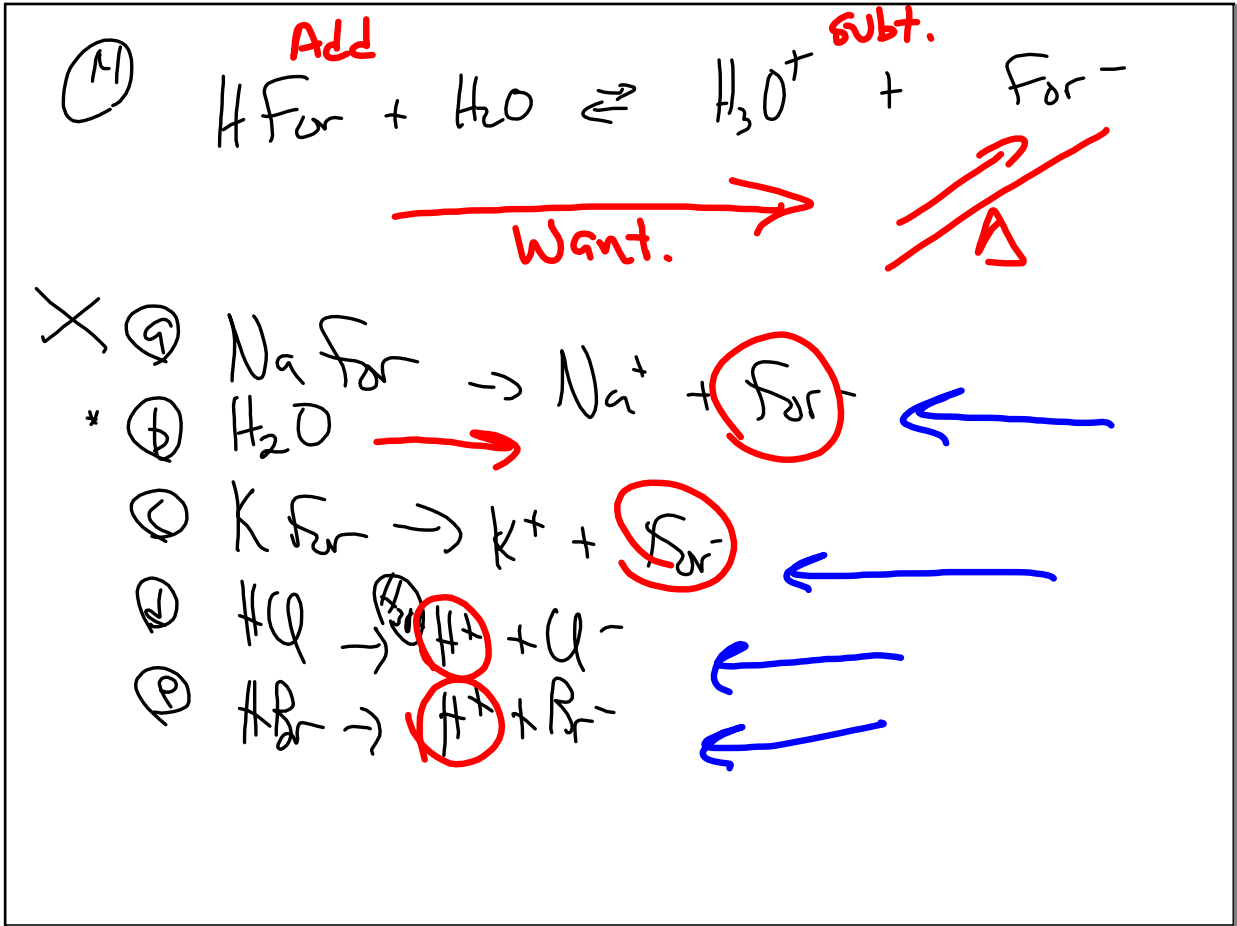
$KOH$   
SB

$\searrow$

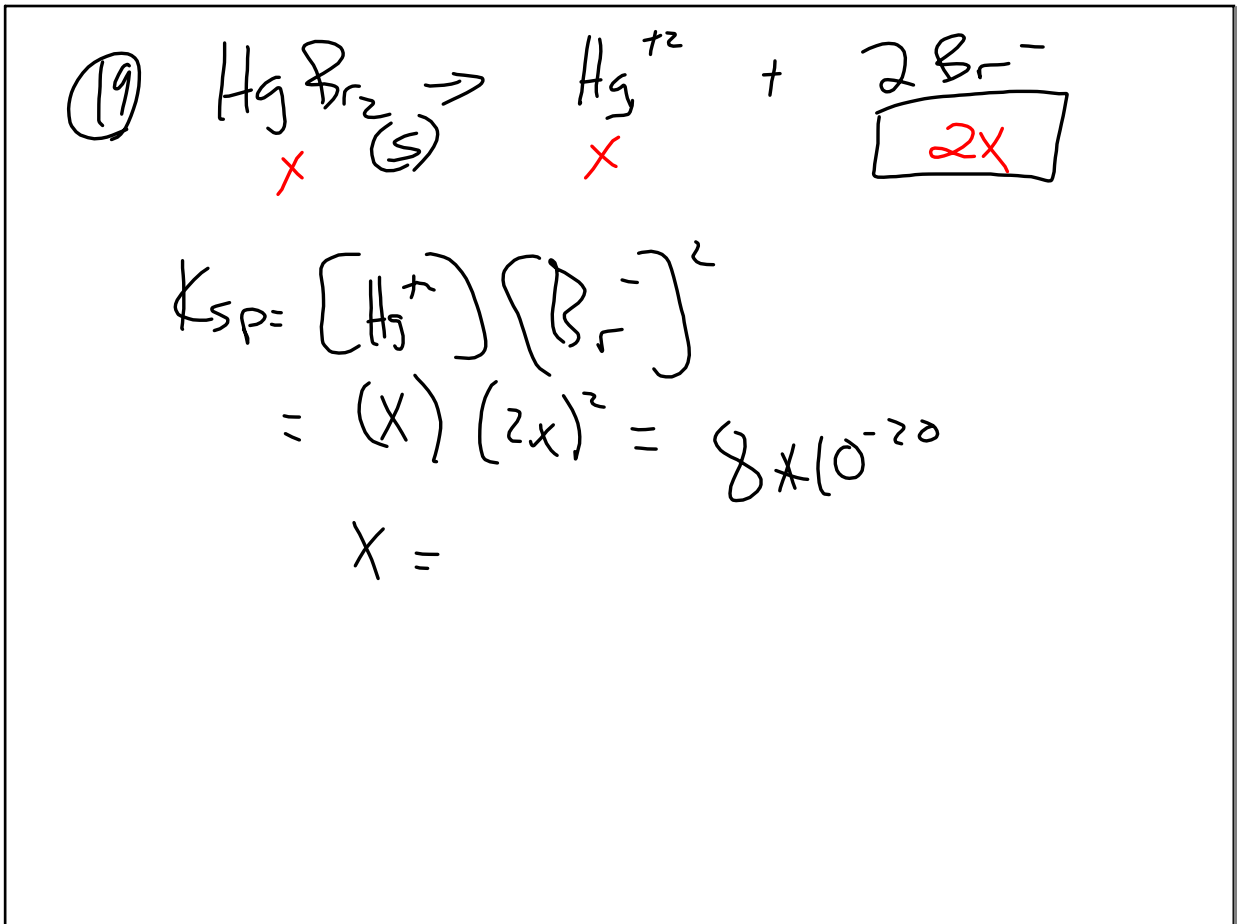
$H_2CO_3$   
WA

(B)

Mar 13-8:01 AM



Mar 13-8:08 AM



Mar 13-8:19 AM

$$\textcircled{21} \quad \text{Fe} \left( \text{IO}_3 \right)_3 (s) \rightarrow \text{Fe}^{+3} (aq) + 3 \text{IO}_3^- (aq)$$

$$Q_{sp} = (\text{Fe}^{+3}) (\text{IO}_3^-)^3$$

$$= (1 \times 10^{-4}) (1 \times 10^{-5})^3$$

$$Q_{sp} = 1 \times 10^{-19}$$

$$K_{sp} = 1 \times 10^{-14}$$

$$Q < K$$

Mar 13-8:23 AM

$$\textcircled{FC2} \quad \text{HX} \rightarrow \text{H}^+ + \text{X}^-$$

I	0.01	}	x	}	x
Δ	-x	}	+x	}	+x
E	0.01-x	}	(x)	}	x

$$K_a = \frac{(x)(x)}{0.01-x} = \frac{1 \times 10^{-8}}{1 \times 10^{-2}} = 1 \times 10^{-6}$$

$$\frac{\text{H}^+}{\text{HX}} = \frac{1 \times 10^{-4}}{1 \times 10^{-2}} \times 100 = (1 \times 10^{-2}) (1 \times 10^2) = 1 \times 10^0 = 1$$

$$\text{pH} = 4$$

$$[\text{H}^+] = 1 \times 10^{-4}$$

Mar 13-8:32 AM

LAB

Create Titration Curve

1M HCl                      1M NaOH

50ml  
100ml

1ml 1M HCl  
+  
19ml H<sub>2</sub>O

pH

100ml

ml base added

Mar 13-8:37 AM

100ml 1M NaOH

$\frac{\#g}{100ml}$

Data Analysis      Chromesoft

Mar 13-8:43 AM