

(11-31)

$$\ln A_t = -kt + \ln A_0$$

$$\ln A_t = -\left(\frac{0.693}{11.4}\right)(25) + \ln 200$$

$t_{1/2} = 11.4 \text{ days}$
 $t_{1/2} = \frac{0.693}{k}$
 $t = 600 \text{ hrs.}$
 $\frac{600}{24} = 25 \text{ days}$

 $k = \frac{0.693}{11.4}$

May 1-7:38 AM

(11-32) 50ml 0.125M NaOH + 40ml 0.125M HNO₃
mols = M * L TOTAL VOLUME = 90ml

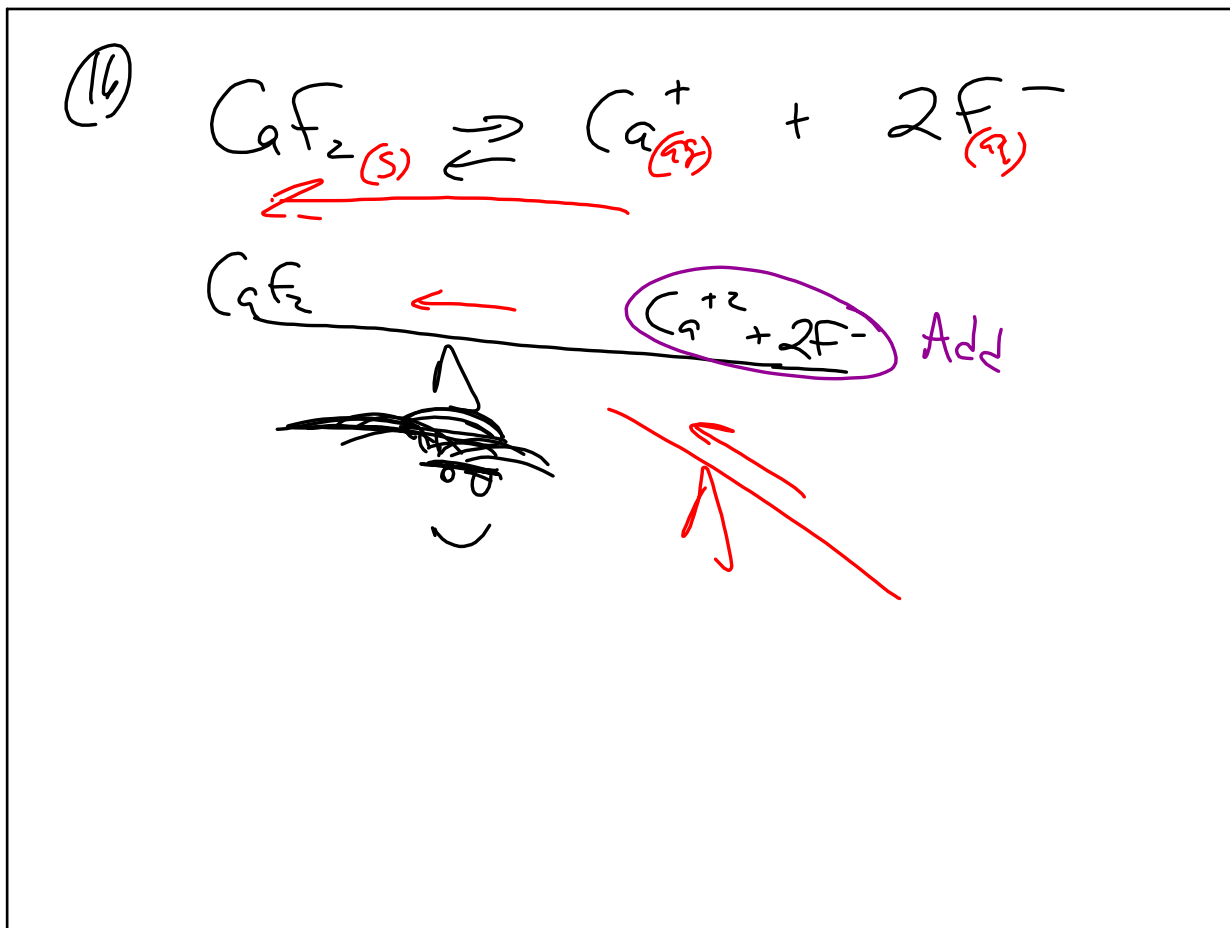
~~NaOH~~ + ~~HNO₃~~ → ~~NaNO₃~~ + H₂O

R	OH ⁻	+ H ⁺	→	H ₂ O
I	0.00625 mols	0.005 mols		
C	-0.00500	-0.005		+0.005
E	0.00125 mols			0.005

0.009 f → 0.01389M OH⁻
 pH = 14 - pOH = 14 - (-log(0.01389)) = 12.13

① Next using mols with NET Ions Eq. Subt smaller amt.
 ② Reak new M. M = $\frac{\text{mols}}{L}$

May 1-7:58 AM



May 1-8:17 AM

	ACIDS	Bases
Arrhenius	H^+ only donor	OH^- only acceptor
Bronsted Lowry	H^+ donor	H^+ acceptor
Lewis	e^- pair acceptor	e^- pair donor

May 1-8:21 AM

16-3

200 + 11 = 211

time

4

$\frac{1}{k}$

flip rxn

$\frac{1}{k}$

cat %

$\left(\frac{1}{k}\right)^{1/2}$

$\frac{1}{k\%} = \sqrt{7.52 \times 10^{-4}}$

May 1-8:35 AM

16-3

1 → 2

A^2 Rate

$2^2 = 4$

B^0 Rate

$2^0 = 1$

(2,3)

Rate = $k[A]^2[B]^0$

= $k[A]^2$

May 1-8:41 AM

⑥ ${}_{90}^{234}\text{Th} \rightarrow {}_{-1}^0\text{e}^- + {}_{91}^{234}\text{Pa}$

⑦ endo
 $\oplus \Delta H$
 Not Spont

$\Delta G = \Delta H - T\Delta S$
 BIG
 Spont

May 1-8:43 AM

⑧ $\text{HCN} \rightarrow \text{H}^+ + \text{CN}^-$ $K_a = 4.9 \times 10^{-10}$

I	0.2M	x	x
Δ	-x	+x	+x
E	0.2-x	x	x

MOLE RATIO!

$K_a = \frac{[\text{H}^+][\text{CN}^-]}{[\text{HCN}]} = \frac{(x)(x)}{0.2} = \frac{4.9 \times 10^{-10}}{1}$

$x = 9.9 \times 10^{-6} = [\text{H}^+]$

$\text{pH} = -\log [\text{H}^+] = 5.0$

May 1-8:47 AM

⑨ $E = E^{\circ} - \frac{RT}{nF} \ln Q$ $Q = \frac{[Zn^{+2}]}{[Cu^{+2}]}$

$E = 1.10 - \frac{(8.314)(298)}{2(96500)} \ln \frac{0.05}{5}$

$E =$

May 1-8:52 AM

⑫ $20\text{ml } 0.3\text{M KOH} + 100\text{ml } 0.15\text{M HCN} \rightarrow \text{KCN} + \text{H}_2\text{O}$

$K_f = 4.9 \times 10^{-10}$

① <u>Meat</u>	I	0.006	0.015		
② <u>Meat</u>	Δ	-0.006	-0.006	+0.006	
	E		0.009	0.006	
			0.120	0.120	

③ Meat

	HCN	\rightarrow	H ⁺	+	CN ⁻
I	0.075				0.05
Δ	-x		+x		+x
E	0.075-x		x		0.05+x

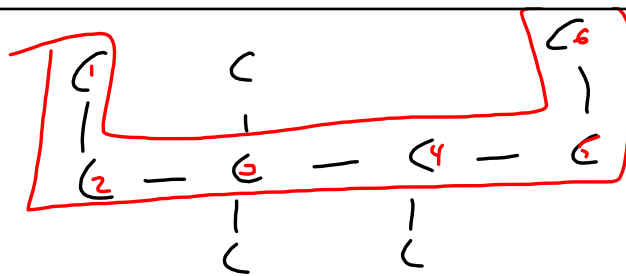
$K = \frac{x(0.05+x)}{0.075-x} = 4.9 \times 10^{-10}$

$x = [H^+] = 7.35 \times 10^{-10}$

pH = 9.13

May 1-8:58 AM

(13)



3,3,4 trimethyl hexane

May 1-9:08 AM

$$\Delta G^\circ = -RT \ln K$$

$$51 = -(8.314 \times 10^{-3})(298) \ln K$$

$$K = 0.9796$$

May 1-9:11 AM

$$\textcircled{1} \text{ pH} = 4.282$$

$$\text{pOH} = 14 - 4.282 = 9.718$$

Marq
①
/st



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

$$9.718 = -\log (\text{OH}^-)$$

$$-9.718 = \log (\text{OH}^-) \\ = (\text{OH}^-)$$

May 1-9:14 AM