

15/44 $\text{Br}_2(\text{g}) + \text{Cl}_2(\text{g}) \rightleftharpoons 2 \text{BrCl}(\text{g}) \quad K_c = 7$

I	0.25 M	0.25 M	
D	-x	-x	+ 2x
E	0.25-x	0.25-x	2x

MOLE RATIO

$K_c = \frac{[\text{BrCl}]^2}{[\text{Br}_2][\text{Cl}_2]} = \frac{(2x)^2}{(0.25-x)^2} = 7$

$\frac{2x}{0.25-x} = \frac{2.65}{1}$

$2x = 0.6625 - 2.65x$
 $+ 2.65x \quad \quad \quad + 2.65x$

 $4.65x = 0.6625$
 $x = 0.142$

Feb 11-7:35 AM

(14) $4 \text{PuCl}_3(\text{s}) \rightleftharpoons \text{Pu}_4(\text{s}) + 6 \text{Cl}_2(\text{g})$

I	1 M		
D	-4x	+x	+6x
E	1-4x	x	6x

$K = \frac{(\text{Pu}_4)(\text{Cl}_2)^6}{(\text{PuCl}_3)^4} = \frac{(x)(6x)^6}{(1-4x)^4}$

$(6x)(6x)(6x) \dots$

Feb 11-8:40 AM

(13) $\text{NH}_3(g) + \text{H}_2\text{S}(g) \rightleftharpoons \text{NH}_4\text{HS}(s)$ $K_c = 9.7$

I	1	1	
C	-x	-x	+x
E	1-x	1-x	x

$1 - 0.678 = 0.322$
 $K_c = \frac{1}{(\text{NH}_3)(\text{H}_2\text{S})} = \sqrt{\frac{1}{(1-x)^2}} = \sqrt{9.7}$
 $\frac{1}{1-x} = \sqrt{9.7}$
 $3.11 - 3.11x = 1$
 $-3.11 \quad -3.11$
 $\frac{-3.11x = -2.11}{-3.11 \quad -3.11}$
 $x = 0.678$

Feb 11-8:44 AM

$6 \text{H}_2\text{O}(g) + 4 \text{NH}_3(g) \rightarrow (\text{CH}_2)_6\text{N}_4(g) + 6 \text{H}_2\text{O}(l)$

$\frac{6}{1} \times -\frac{1}{4} \frac{\Delta[\text{NH}_3]}{\Delta t} = \frac{6}{1} \times \frac{1}{6} \frac{\Delta[\text{H}_2\text{O}]}{\Delta t}$
 $\frac{6}{4} = \frac{3}{2}$
 $\frac{3}{2} \frac{\Delta[\text{NH}_3]}{\Delta t} = \frac{\Delta[\text{H}_2\text{O}]}{\Delta t}$

Feb 11-8:58 AM

$$\textcircled{2} \quad \frac{1}{[A]_t} = kt + \frac{1}{A_0}$$

$$\frac{1}{0.125} = 0.47 t + \frac{1}{0.25}$$

$$t = 8.5 \text{ s}$$

$$t_{1/2} = \frac{1}{k(A_0)}$$

$$= \frac{1}{(0.47)(0.25)}$$

$$= 8.5$$

Feb 11-9:04 AM

$$\textcircled{10} \quad \ln A_t = -kt + \ln A_0$$

$$\ln 0.391 = -2.44 t + \ln 1$$

Feb 11-9:24 AM

(13) $t_{1/2} = 19 \text{ min}$ (1°) $A_0 = 1$ $A_t = 0.125$
 @ 500°C

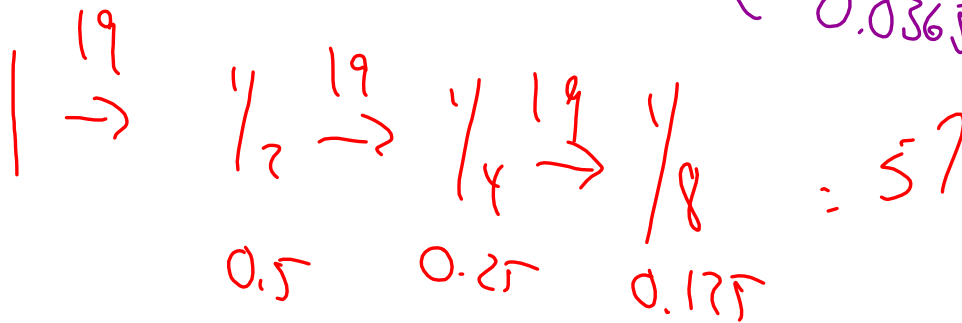
$$\ln A_t = -Kt + \ln A_0$$

$$\ln(0.125) = (-0.0365)t + \ln 1$$

$t = 57$

$$t_{1/2} = \frac{0.693}{K}$$

$$K = \frac{0.693}{t_{1/2}} = \frac{0.693}{19} = 0.0365$$



Feb 11-9:27 AM