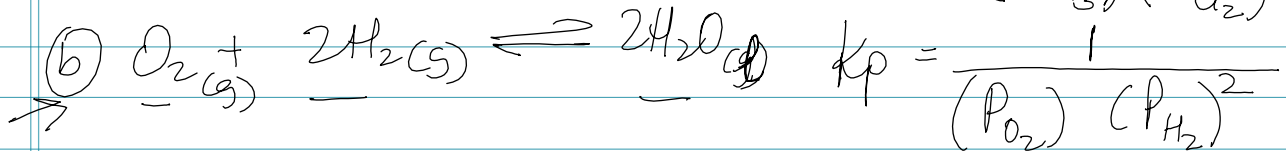
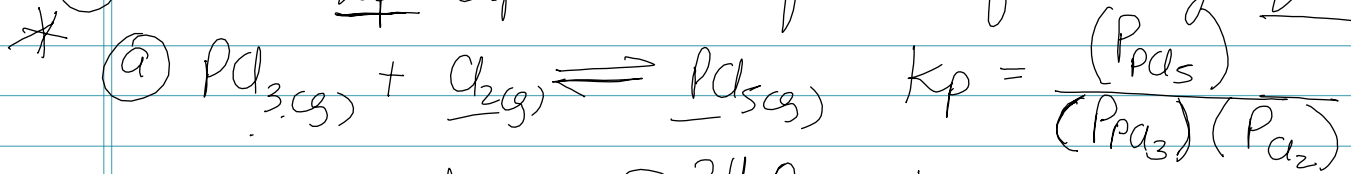


## Eq ③ $K_c$ and $K_p$ Calculations.

\* ① Write  $K_p$  expressions for the following equations.



$$K_p = K_c (RT)^{\Delta n}$$

$\Delta n = \text{products} - \text{reactants}$

$$PV = nRT \quad P = \frac{n}{V}RT$$

↑ ↑ ↑  
gas const temp  $K_c$  molarity

\* ② What is the  $K_p$  of  $\text{N}_2\text{O}_4(\text{g}) \rightleftharpoons 2\text{NO}_2(\text{g})$   $K_c = 4.63 \times 10^{-3}$  @  $25^\circ\text{C}$

\*  $T = 25 + 273 = 298$  .  $\Delta n = 2 - 1 = 1$

$$K_p = K_c (RT)^{\Delta n} = 4.63 \times 10^{-3} (0.0821 \times 298)^1$$

$$= \boxed{0.113}$$

\* ③ Calculate  $K_p$  of  $\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) \rightleftharpoons 2\text{NH}_3(\text{g})$   $K_c = 2.3 \times 10^{-3}$  @  $375^\circ\text{C}$

\*  $T = 375 + 273 = 648$  ,  $\Delta n = 2 - 4 = -2$

$$K_p = K_c (RT)^{\Delta n} = 2.3 \times 10^{-3} (0.0821 \times 648)^{-2}$$

$$= \boxed{8.13 \times 10^{-6}} \quad \frac{1}{(\text{L})^2}$$