Chem1403 Worksheet
Effect of Concentration Rate Problems

1. **The following reaction was studied, and data was collected.**

$$2\ NO_{(g)} + 2H_{2\,(g)} \rightarrow N_{2\,(g)} + 2H_2O_{(g)}$$

Experiment	[NO] (M)	[H_2] (M)	Rate (M/s)
1	0.002M	.115M	2.45×10^{-3} M/s
2	0.002M	.230M	.0098 M/s
3	0.004M	.115M	.0196 M/s

   a. **Determine order of reaction for NO and H_2**
   b. **Determine k for the rate law equation**
   c. **What is the overall order of the reaction?**

2. **The following reaction was studied, and data was collected.**

$$NH_4^{+}{}_{(aq)} + NO_2^{-}{}_{(g)} \rightarrow N_{2\,(g)} + 2H_2O_{(l)}$$

Experiment	[NH_4^+] (M)	[NO_2^-] (M)	Rate (M/s)
1	0.025M	.390M	4.005×10^{-3} M/s
2	0.050M	.130M	1.78×10^{-3} M/s
3	0.025M	.130M	4.45×10^{-4} M/s

   a. **Determine order of reaction for NO and H_2**
   b. **Determine k for the rate law equation**
   c. **What is the overall order of the reaction?**