Initial Rates

Consider the following chemical reaction:

$$2\ NO\ (g) + 2\ H_2\ (g) \rightarrow N_2\ (g) + 2\ H_2O\ (g)$$
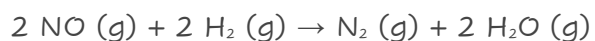
Use the data below to answer the following questions.

Experiment	H_2, atm	NO, atm	Rate, atm/s
1	0.263	0.100	1.84×10^{-4}
2	0.263	0.200	7.11×10^{-4}
3	0.263	0.240	1.03×10^{-3}
4	0.197	0.267	9.47×10^{-4}
5	0.191	0.267	9.21×10^{-4}
6	0.136	0.267	6.45×10^{-4}

a) Determine the order with respect to H_2.

b) Determine the order with respect to NO.

c) What is the overall order of the reaction?

d) Write the rate law for the reaction.

e) What is the value of the rate constant, k?

f) What is the rate, in atm/s if the H_2 pressure is 0.155 atm and NO is 0.240 atm?