- Hydrogenation of NO to N_2 and water is a potential means of reducing smog-forming NO_x gases:

$$2H_2(g) \ + \ 2NO(g) \ \rightarrow \ N_2(g) \ + \ 2H_2O(g)$$
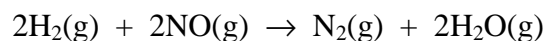
The initial rates of this reaction at constant temperature were determined at the following combination of initial pressures (P_0).

Experiment	P_0 H$_2$ (kPa)	P_0 NO (kPa)	Rate (kPa s^{-1})
1	53.3	40.0	0.137
2	53.3	20.3	0.033
3	38.5	53.3	0.213
4	19.6	53.3	0.105

What is the order of the reaction? Show all working.

Answer:

What is the value of the rate constant?

Answer: