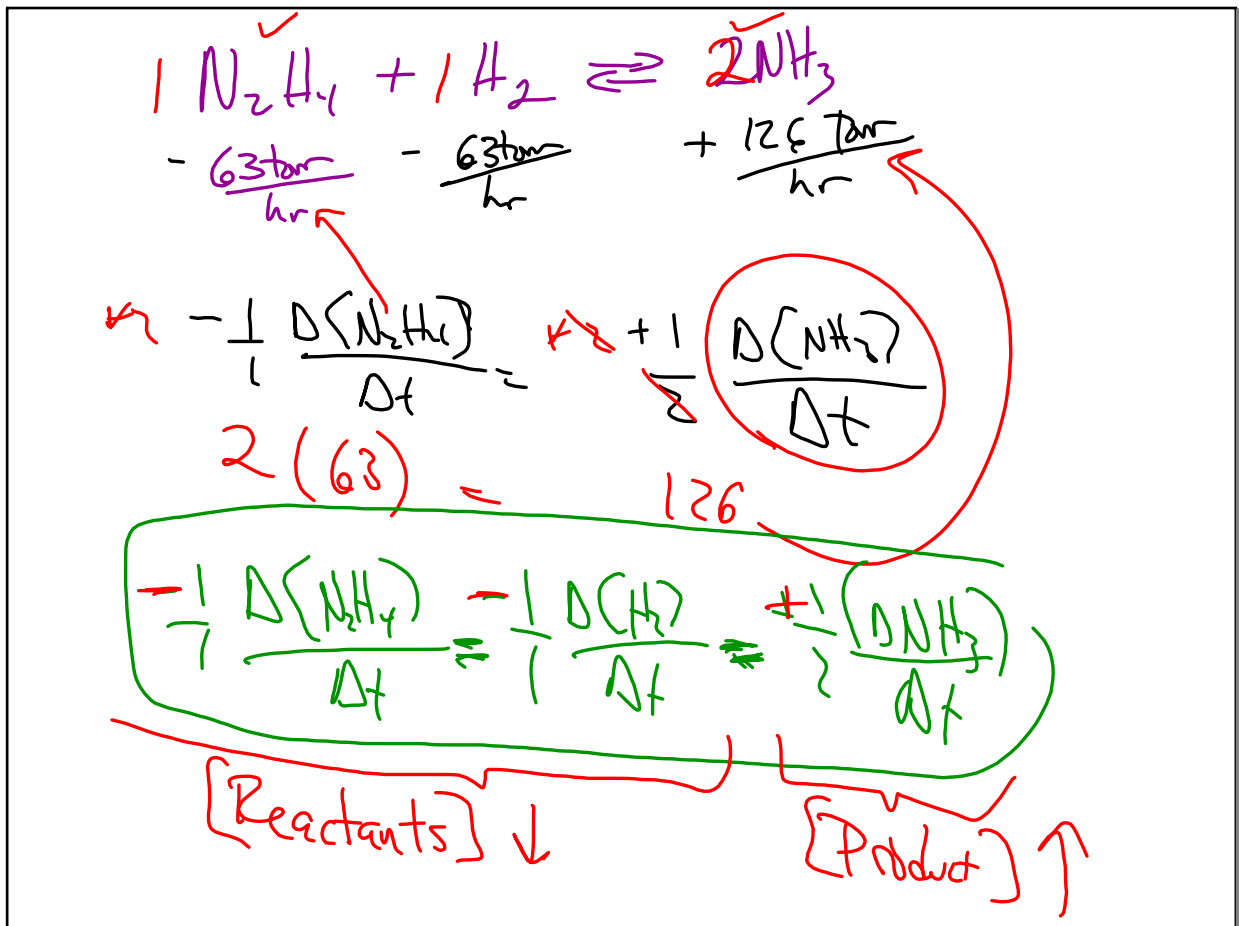


Jan 31-7:54 AM



Jan 31-8:21 AM

Rate Law

Rxn orders  
how hard each works  
to make  
product.

$$\text{Rate} = k [\text{react 1}]^m [\text{react 2}]^n$$

To evaluate react #1, React #2 stays constant

**DATA TABLE**

Jan 31-8:27 AM

PS80 14.2

$$\text{NH}_4^+ + \text{NO}_2^- \rightarrow \text{N}_2 + 2\text{H}_2\text{O}$$

Expt 1 → 2

[NH<sub>4</sub><sup>+</sup>] 1 → 2  
 ↓  
 2 = 2  
 doubles

Rate 1 → 2  
 ↓  
 2 = 2

4 → 6

[NO<sub>2</sub><sup>-</sup>] 4 → 6  
 ↓  
 4 = 4

Rate

**Rate = k [NH<sub>4</sub><sup>+</sup>]<sup>1</sup> [NO<sub>2</sub><sup>-</sup>]<sup>1</sup>**

First order in NH<sub>4</sub><sup>+</sup>

#1

SOLVE pick any 1 expt and plug in.

$$5.4 \times 10^{-7} = k [0.01]^1 [0.2]^1$$

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Exp	React	Rate
1	2	0.1
2	6	0.9

$3^2 = 9$   
 Rate =  $k [\text{React}]^2$

$\sum x = 9$   
 $x = 2$

Jan 31-8:41 AM

$[ ]$  rate

$2^x = 3$

LOG RULES  
 $\log a^b = b \log a$   
 $\log ab = \log a + \log b$   
 $\log \frac{a}{b} = \log a - \log b$

Use LOG  
 OR  
 LN

Jan 31-8:43 AM

$$2^x = 3$$

$$\log 2^x = \log 3$$

$$\frac{x \log 2}{\log 2} = \frac{\log 3}{\log 2}$$

Jan 31-8:45 AM

14 / 24, 26, 32

Per 3, 6, 9, 10 # extra help

Jan 31-8:46 AM