

11.S: Chemical Kinetics I (Summary)

The results of the integration of these simple rate laws can be summarized in the following table.

Order	Elementary Reaction	Integrated rate law	Linear plot
0	-	$[A] = [A]_o - kt$	$[A]$ vs. t
1	$A \rightarrow P$	$\ln[A] = \ln[A]_o - kt$ $[A] = [A]_o e^{-kt}$	$\ln[A]$ vs. t
2	$A + A \rightarrow P$	$\frac{1}{[A]} = \frac{1}{[A]_o} + kt$	$\frac{1}{[A]}$ vs. t
	$A + B \rightarrow P$	$\frac{1}{[B]_0 - [A]_0} \ln\left(\frac{[B][A]_o}{[A][B]_o}\right) = kt$	$\ln\left(\frac{[B]}{[A]}\right)$ vs. t

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