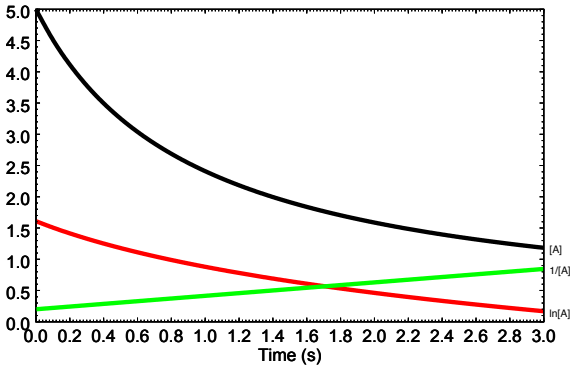
Worksheet 7: Integrated Rate Laws

1. Use the figures below to determine the order of the reaction $A + B \longrightarrow C$ with respect to A.



2. The decomposition of ozone in the presence of atomic oxygen follows second order kinetics with a rate constant of 0.5 $\text{ppm}^{-1}\ \text{s}^{-1}$. What is the concentration of ozone remaining after 2 hours if there is initially a concentration of 100 ppm?

3. Calculate the rate constant for the radioactive decay of polonium, given the half-life is 138.4 days. Assume that it follows first order kinetics, and be sure to include the proper units.

4. Calculate the half-life for the radioactive decay of radium, given second order kinetics and a rate constant of $4.37 \times 10^{-2}\ \text{M}^{-1}\ \text{day}^{-1}$.