3. The following growth equation was derived for color-dyed rock candy:

$\frac{R-1.8x10^{-3}mm/min}{3x10^{-3}mm/min-R} = \frac{1}{AC^m}$ where R is growth rate in units [mm/min] and C is concentration of dye in parts per million (ppm). Growth rate data was collected for the following concentrations:

C (ppm)	50	75	100	125	150
R (mm/min)	0.0025	0.0022	0.00204	0.00195	0.0019

a. What are the numerical values and units of A and m?

b. For a dye concentration of 400ppm, what is the estimated growth rate? Are you confident in this estimate, why or why not?

4. Sulfuryl chloride is used in the production of pesticides. The decomposition of sulfuryl chloride, $SO_2Cl_2 \rightarrow SO_2 + Cl_2$ follows a first order rate law such that the concentration of SO_2Cl_2 as a function of time is described by the following exponential function: $C_A = C_{A0}e^{(-kt)}$. C_A is the concentration of SO_2Cl_2 at any time (t) and C_{A0} is the concentration at time = zero. The reaction was carried out and concentrations measured at various times to obtain the data below.

t (min)	4	21.3	39.5	63.4	120	175.6
C_A (mol/L)	0.0279	0.0262	0.0246	0.0226	0.0185	0.0152

a. What are the units of C_{A0} and k?

b. How should you plot the data to obtain a straight line on a plot with rectangular coordinates?

c. Plot the data (in Excel, etc.) as you described in part b and determine the numerical values of C_{A0} and k.