You get an email from a professor telling you that he needs your help in determining the energy barrier for an elementary chemical reaction, but he doesn't know Python well enough to fit a line to his experimental kinetic data. He tells you he uploaded all of his data to the UW Canvas page for ChemE 465 (somehow) and that if you help him solve this problem, he will transfer $1 million to your bank account. Nothing about this arrangement seems fishy, so you believe him.

a. Download the kinetic data from Canvas and make a linear Arrhenius plot showing: 1) the provided data and 2) your fitted line. Be sure to label the axes appropriately (don't forget units!), give it a title, and include a legend.

b. Calculate what the activation energy (E_a) and pre-exponential factor (A) would be from your fitted line.

c. Create an exponential plot with the provided data and overlay what the exponential function should look like given your estimated kinetic data.

d. Describe how the rate changes as a function of temperature in a Markup cell and explain why you believe this makes sense.

e. Print out the Jupyter notebook that you used to create your plots and calculate your kinetic parameters (printing in landscape seems to prevent things from being cutoff).

Note: the professor was kind enough to tell you that his temperatures were recorded in K and his kinetic rate constants were in s^{-1}.