

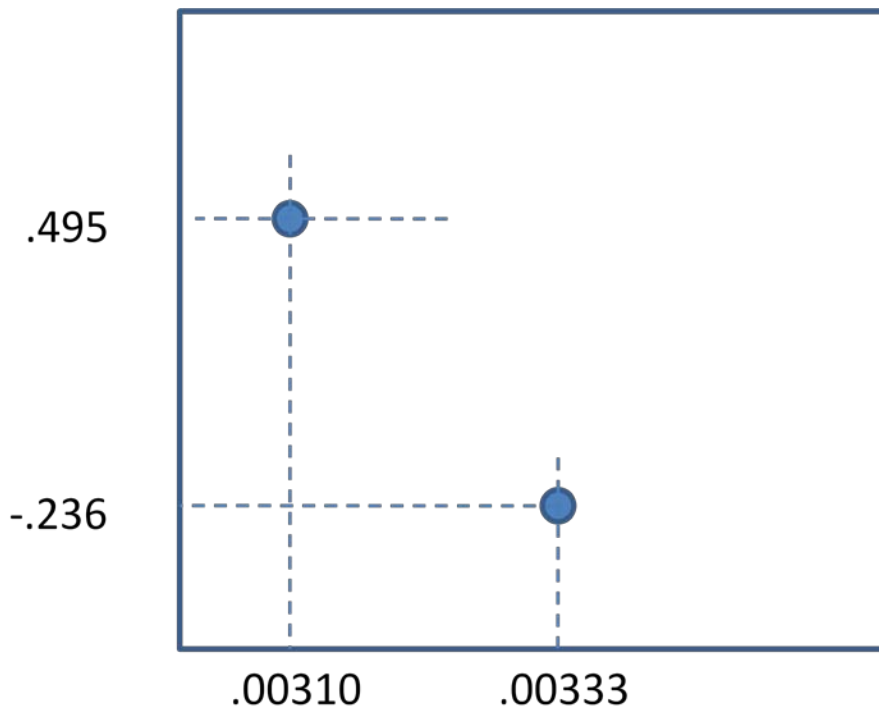
Kinetics & Reactor Design I: Kinetics

Continuing Ed workshop by Richard Skeirik, PE

Temperature Dependence Exercise

Two k measurements were made for a simple reaction (Data from Naumann). Your colleague started to fit k as a function of T and left you this table and unfinished plot:

T, K	k $\text{gmol (l)}^{-1} (\text{sec})^{-1}$	$1/T$	$\ln(k)$
300	.79	.00333	-.236
323	1.64	.00310	.495



Show how you would use this to get an Arrhenius function for k . You don't have to compute the values, just show how you would use the plot.

Write the Arrhenius form. Just write it with A and E_a since you're not computing these right now.

What units will A have?

What value of the gas constant would you use?

$R = 8.314 \text{ J/gmol/K}$

$R = 1.99 \text{ cal/gmol/K}$

$R = 1545 \text{ ft-lb}_f/\text{lbmol/R}$

$R = 1.99 \text{ BTU/lbmol/R}$

What units will E_a have?

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