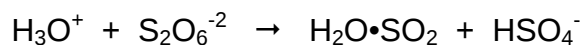


Due: Sept. 05, 2006

Using the data in the Table below obtained for the reaction (Lente, *New. J. Chem.* **2005**, 759)



$T (^{\circ}\text{C})$	$T (\text{K})$	$k (\text{M}^{-1}\text{s}^{-1})$
50.0	323.2	9.54×10^{-7}
55.0	328.2	1.91×10^{-6}
60.0	333.2	3.76×10^{-6}
65.0	338.2	7.33×10^{-6}
70.0	343.2	1.38×10^{-5}
75.0	348.2	2.56×10^{-5}
80.0	353.2	4.71×10^{-5}
85.0	358.2	8.43×10^{-5}
90.0	363.2	1.47×10^{-4}

Determined $\Delta H^{\ddagger}$ and $\Delta S^{\ddagger}$ by two methods:

$$(a) \quad \ln \frac{k}{T} = - \frac{\Delta H^{\ddagger}}{RT} + \frac{\Delta S^{\ddagger}}{R} + \ln \frac{k_B}{h} \quad k_B = \text{Boltzmann's constant}$$

$$\text{plot } \ln \frac{k}{T} \text{ vs } \frac{1}{T}$$

$$(b) \quad T \times \ln \frac{k}{T} = T \times \left(\ln \frac{k_B}{h} + \frac{\Delta S^{\ddagger}}{R} \right) - \frac{\Delta H^{\ddagger}}{R}$$

$$\text{plot } T \times \ln \frac{k}{T} \text{ vs } T$$