

$$\ln n! = n \ln n - n$$

$$e = \frac{\ln n! - n \ln n + n}{\ln n!}$$

$$e = \frac{1}{n}$$

300 - 600 K

10 K.

$$\alpha = \exp\left(-\frac{\Delta H}{RT}\right)$$

$$\Delta H = \text{kJ/mol} \quad 68 \text{ kJ/mol.}$$

for Al.

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

$$T = 300$$