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Course 565/665 Lecturer prof. cavagnero

Day 3.9.04 Date 9:55 am

Notes Taken By J. Hong Total Number of Pages

chapter 9. maxwell relation

$$\frac{\partial^2 U}{\partial V \partial S} = \frac{\partial^2 U}{\partial S \partial V} \Rightarrow \left(\frac{\partial T}{\partial V}\right)_S = -\left(\frac{\partial P}{\partial S}\right)_V$$

general procedures:

① Identify independent variables in the target relation.

(ex) $\left(\frac{\partial S}{\partial P}\right)_{T,N}$

② find a thermal fn. that has the above independent variables as natural variables. $G(N,T,P)$.

③ express the fn in ② as a fn. of its natural variables

$$dG = -SdT + VdP + \sum_{j=1}^{M} \mu_j dN_j$$

④ apply euler relation.

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