

PHY 410

HW#7

Assigned: March 16: Due March 23

7.1 Calculate μ/τ and the absolute activity (or fugacity) λ for Ar gas at 300K for concentrations 10^{16} , 10^{18} , 10^{20} (in units of $1/\text{cm}^3$).

7.2 Starting from the thermodynamic identity

$$\tau d\sigma = dU + p dV - \mu dN$$

Calculate pressure p and entropy σ in terms of derivatives of Helmholtz free energy $F(N, \tau, V)$.

Show that: $\left(\frac{\partial p}{\partial \tau}\right)_{N, V} = \left(\frac{\partial \sigma}{\partial V}\right)_{N, \tau}$: Maxwell Relation

7.3 Problem 6, Chapter 5 of the text.

7.4 Problem 8, Chapter 5 of the text.

7.5 Problem 1, Chapter 5 of the text.