

Answers to some of assigned problems from Chapter 3
Thermodynamics, Statistical Mechanics & Kinetics,
by T. Engel and P. Reid, 3rd Edition

P3.4 $\left(\frac{\partial U}{\partial V}\right)_T = T\beta/\kappa - P$

P3.13 for a ideal gas $\beta = 1/T$, $\kappa = 1/P$, and $C_P - C_V = nR$.

P3.16 for a ideal gas $\mu_J = 0$, for a van der Waals gas $\mu_J = \frac{-n^2a}{C_V V^2}$

P3.19 for a gas described by the Berthelot equation of state, $\left(\frac{\partial U}{\partial V}\right)_T = \frac{2a}{TV_m^2}$