ASSIGNMENT 3

CHEMISTRY 305

Due: 4:30 pm Tuesday 27 January 2009

1. Derive the following:

   (a)
   $$\left(\frac{\partial U}{\partial V}\right)_T = T\left(\frac{\partial p}{\partial T}\right)_V - p$$

   (b)
   $$\left(\frac{\partial H}{\partial P}\right)_T = V - T\left(\frac{\partial V}{\partial T}\right)_p$$

2. Evaluate the two expressions derived in question 1 for each of
   (a) a perfect gas
   (b) a hard-sphere gas
   (c) a van der Waals gas
   (d) a Berthelot gas
   (e) a gas described by the virial equation.

3. Do question 26 on page 487 of your text.

4. Do question 4 on page 593 of your text.

5. Do question 6 on page 593 of your text.