

Chemistry 342
Fall, 2001
Problem Set 2

Due Wednesday September 3

Finish Chapter 1 and read also sections 2.1-2.4 in chapter 2.

Answering the following questions in Chapter 1: Exercises 14 and 15; Problems 15, 16, 17, 23, 35.

In problem 17, part (a) should be done using the method on page 35, and part (b) should be done using a series expansion to get a Virial representation of the van der Waals equation. This expansion is provided in the notes and will be discussed in class.

Also, answer the following question:

A space station has a volume of $1,000 \text{ m}^3$. It is filled with 1 atm of N_2 at 298 K. Suddenly a hole with an area of 1 cm^2 is created by a meteor. What is the pressure in the station after 10^3 seconds? 10^4 seconds? 10^5 seconds? (The last case requires extra thought.)

Hint: Do everything analytically, and plug numbers in only at the end. For the last case you will need to solve a differential equation, similar to the one in Problem 1.35.