Department of Physics, University of Maryland, College Park, MD 20742-4111

Physics 404　　　　　　　　**HOMEWORK ASSIGNMENT #6**　　　　　　　**Spring 2009**

Due date: Tuesday, March 31　　　　**Deadline:** Thursday, April 2

B means a problem in Blundell & Blundell's text; GT means a problem in Gould & Tobochnik.

1. B 7.1　Assume that the residual gas is N_2 and that you are at room temperature, so T is about 300K or $(1/40)eV/k_B$.　Express your answer in Pa, mbar, and Torr.

2. B 8.1　Again, assume that you are at room temperature as in Example 8.1.

3. B 8.2

4. B 19.3, amplifying comments in class

5. [B 19.5 &] 19.6　Show that the numerical constant is $\Gamma(1 + n^{-1})/\Gamma(n^{-1}) = 1/n$, where Γ is defined in Eq. C.2 and $\Gamma(1 + x) = x\,\Gamma(x)$.　Note that B 19.5 follows from B 19.6 since $\Gamma(2)/\Gamma(1) = 1/1 = 1$. Also $\Gamma(3/2)/\Gamma(1/2) = \frac{1}{2}$, giving the familiar result for quadratic modes.

Problem B 8.3 is also interesting.　It is worth your attention, but is not assigned.