

## PH421 - Thermal and Statistical Physics

### Assignment 4 - Jan 23, 2008

#### 1. Definition of pressure from entropy.

Using the Second Law of thermodynamics, one finds that pressure can be defined as

$$p = T \frac{\partial S}{\partial V} \quad (1)$$

Use the density of states  $\Omega$  for an ideal gas, to show that Equation 1 is consistent with the ideal gas law.