

**Physics 3002**  
**Problem Set 2, due 2/11/09**  
**Lam Hui**

1. Suppose the equation of state of some form of stuff is  $P = w\varepsilon$ , where  $w$  is a constant. Derive from the first law of thermodynamics, as discussed in class, the relation between  $\varepsilon$  and  $a$ .
  
2. Repeat the same calculation, but now assume  $w = w_0 + w_1 a$ , where  $w_0$  and  $w_1$  are constants.