**1.) 10^(-3) m^3 of lead is compressed reversibly and isothermally at room temperature from 1 to 1000 atm pressure. Using one of Maxwell’s thermodynamic relations to find the following:**

1. **the change in entropy**
2. **The heat given out**
3. **the change in internal energy of the lead**

**Isothermal compressibility of lead is ( –(1/V) (**∂**V/**∂**p)T) = 2.2\*10^-6 atm^-1**

**Volume Coefficient of Expansion is (1/V) (**∂**V/**∂**T)p = 8\*10^-5 K^-1**

**1 atm = 10^5 Pa**

**2.) Calculate the change in temperature of 10^(-3) m^3 of lead undergoing a reversible and adiabatic compression from 1 to 1000 atms. The adiabatic compressibility of lead is assumed to be independent of pressure with a value of 2.2\*10^-6 atm^-1**

**(hint: write down the partial differential coefficient of temperature with respect to pressure in an adiabatic , reversible process and convert this by a Maxwell relation. Re-express the result in terms of measurable quantities.)**

**some of the required values are given in problem 1 above.**

**Cp for lead is 25J/K and the molar volume is 18.3\*10-6 m^3**