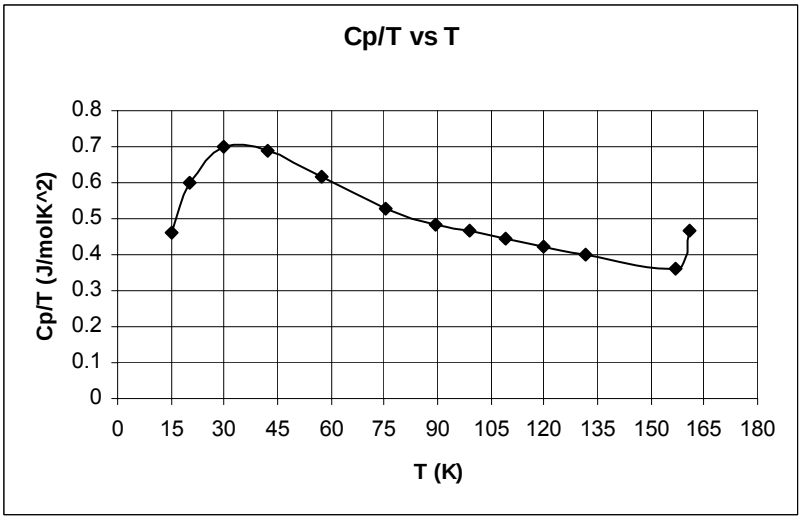
20.110/2.772/5.601 Fall 2005
Recitation # 12
10/25/2005

1. (SAB 3.24) Calculate the molar entropy of carbon disulfide at 25 ^{o}C from the following heat capacity data and the heat of fusion, 4389 J/mol, at the melting point (161.11 K)

T (K)	Cp (J K^{-1} mol^{-1})
15.05	6.9
20.05	12.01
29.76	20.75
42.22	29.16
57.52	35.56
75.54	40.04
89.37	43.14
99.00	45.94
108.93	48.49
119.91	50.50
131.54	52.63
156.83	56.62
161-298	75.48



2. (Levine) The normal boiling point of ethanol is 78.3 ^{o}C, and at this temperature $\Delta_{vap}H_m$ = 38.9 kJ/mol. To what value must P be reduced if we want to boil ethanol at 25.0 ^{o}C in a vacuum distillation?

3. Find the melting point of ice at 100 atm. $\Delta_{fus}H$ = 79.7 cal/g, ρ_{liq}=1.000 g/cm^3, ρ_{ice} = 0.917 g/cm^3.

4. (SAB, example 6.4) Calculate the equilibrium pressure for the conversion of graphite to diamond at 25 ^{o}C. The densities of graphite and diamond may be taken to be 2.25 and 3.51 g/cm^3, respectively, independent of pressure, in calculating ΔG with pressure.
For: C(graphite) → C(diamond) @ 25 ^{o}C and p= 1bar, ΔG^{o}_{dia} = 2900 J/mol, ΔG^{o}_{gra}=0