1. The enthalpy of vaporization of water is 40.7 kJ/mole.
   
a. What is the vapor pressure of water at 25 °C?

   b. On top of a mountain, the atmospheric pressure is 0.75 atm. What is the boiling point of water at this location?

2. Consider the following phase diagrams for water and carbon dioxide, respectively. Which phase is the most dense for each substance? How does pressure affect the MP and BP for each substance?
3. How much energy does it take to convert 180 g of ice at -20.0 °C to steam at 150 °C? (Specific heat capacities: ice, 2.1 J/g°C; liquid, 4.2 J/g°C; vapor, 2.0 J/g °C, \( \Delta H_{\text{vap}} = 40.7 \text{ kJ/mol} \), \( \Delta H_{\text{fusion}} = 6.02 \text{ kJ/mol} \))

4. Determine the final temperature if a 25 g cube of ice at -7 °C is placed in 180 g of water at 64 °C and allowed to come to equilibrium.