

Homework #8**Chapter 23**

1. Sketch the phase diagram for oxygen using the following data: triple point, 54.3K and 1.14 torr; critical point, 154.6K and 37828 torr; normal melting point, -218.4 °C; and normal boiling point, -182.9 °C.
2. Use the phase diagram(s) in Figure 23.5 to describe what would be observed when a sample of water, initially at 1.0 atm at 500 K, is subjected to the following cycle:
 - a. Isobaric (same pressure) heating to 710 K
 - b. Isothermal compression to 500 atm
 - c. Isobaric cooling to 300 K
 - d. Isothermal decompression to 1.0 atm
 - e. Isobaric heating to 500 K
3. The molar enthalpy of vaporization of water is 40.65 kJ/mol at its normal boiling point. Use the Claiius-Clapeyron equation to calculate the vapor pressure of water at 110 °C. The experimental value is 1075 torr; compare to your calculated value.
4. The pressures at the solid-liquid coexistence curve of propane are given by the equation: $P = -718 + 2.38565T^{1.283}$ where P is in bars and T is in Kelvin. Given that $T_{\text{fus}} = 85.46$ K and the molar enthalpy of fusion is 3.53 kJ/mol, calculate $\Delta_{\text{fus}} \bar{V}$ at 85.46 K.
5. McQuarrie and Simon Problem 23-17