4–9 Derive expressions analogous to Eq. (4–18) and Eq. (4–19) for h as a function of P and v.

4–26 (a) Use Eq. (4–8) to derive for a van der Waals gas the equations corresponding to Eqs. (4–38) and (4–40). (b) Compute the work in a reversible adiabatic expansion by direct evaluation of $\int P\,dv$ and by use of the energy equation of Problem 4–1.

4–38 The temperature of a household refrigerator is 5°C and the temperature of the room in which it is located is 20°C. The heat flowing from the warmer room every 24 hours is about 3×10^6 J (enough to melt about 20 lb of ice) and this heat must be pumped out again if the refrigerator is to be kept cold. If the refrigerator is 60% as efficient as a Carnot engine operating between reservoirs having temperatures of 5°C and 20°C, how much power in watts would be required to operate it? Compare the daily cost at 3 cents per kilowatt-hour with the cost of 20 lb of ice (about 75 cents).