A few theoretical problems if you care to practice. I will not post solutions: these are for your consideration purely. I am posting these because a student asked me for extra examples.

√ **2.27** When a system is taken from state A to state B along the path ACB in Fig. 2.22, 80 J of heat flows into the system and the system does 30 J of work. (a) How much heat flows into the system along path ADB if the work done is 10 J? (b) When the system is returned from state B to A along the curved path, the work done on the system is 20 J. Does the system absorb or liberate heat, and how much? (c) If $U_D - U_A = +40$ J, find the heat absorbed in the processes AD and DB.
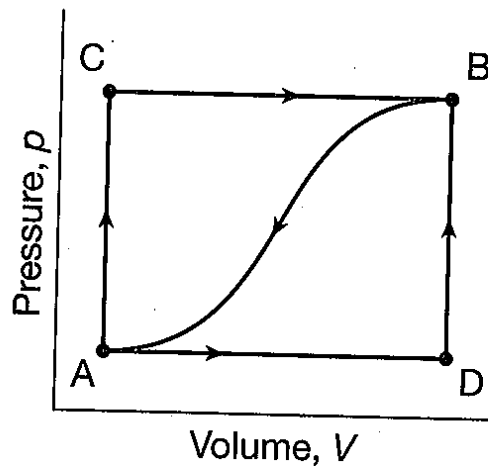
Fig. 2.22

2.28 Show that the value of ΔH for the adiabatic expansion of a perfect gas may be calculated by integration of $dH = V\,dp$, and evaluate the integral for reversible adiabatic expansion.

2.29 Express the work of isothermal reversible expansion of a van der Waals gas in reduced variables and find a definition of reduced work that makes the overall expression independent of the identity of the gas. Calculate the work of isothermal reversible expansion along the critical isotherm from V_c to xV_c.