20.43. A heat engine operates using the cycle shown in Fig. 20.26. The working substance is 2.00 mol of helium gas, which reaches a maximum temperature of 327°C. Assume the helium can be treated as an ideal gas. Process *bc* is isothermal. The pressure in states *a* and *c* is 1.00×10^5 Pa, and the pressure in state *b* is 3.00×10^5 Pa. (a) How much heat enters the gas and how much leaves the gas each cycle? (b) How much work does the engine do each cycle, and what is its efficiency? (c) Compare this engine's efficiency with the maximum possible efficiency attainable with the hot and cold reservoirs used by this cycle.

Figure **20.26** Problem 20.43.