

the 2nd law of thermodynamics, problem set #2

1) The pV-diagram in fig. 1 shows a cycle of a heat engine that uses 0.250 mole of an ideal gas having $\gamma = 1.40$. The curved part ab of the cycle is an adiabatic process.

- a) Find the pressure of the gas at point a . [2 pts]
- b) How much heat enters this gas per cycle, and where does it happen? [3 pts]
- c) How much heat leaves this gas in a cycle, and where does it occur? [3 pts]
- d) How much work does this engine do in a cycle? [3 pts]
- e) What is the thermal efficiency of the engine? [2 pts]

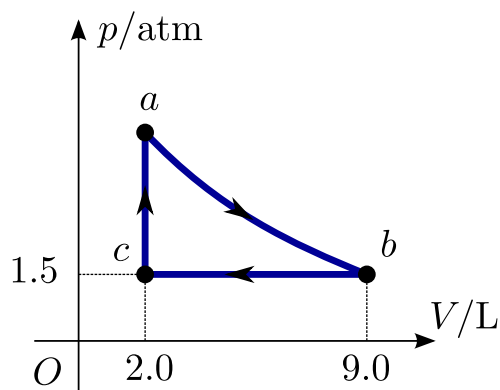


Figure 1: pV-diagram.