[tex144] Expansion and compression of nitrogen gas

One mol of N_2 at 25°C undergoes isothermal expansion from 1.0bar to 0.132bar pressure.
(a) How much work does the gas perform during expansion?
(b) If the gas is then adiabatically compressed by the same amount of work, what will be its final temperature?
Assume that both processes are quasistatic and use $C_V = \frac{5}{2}R$ for diatomic molecules.

Solution: