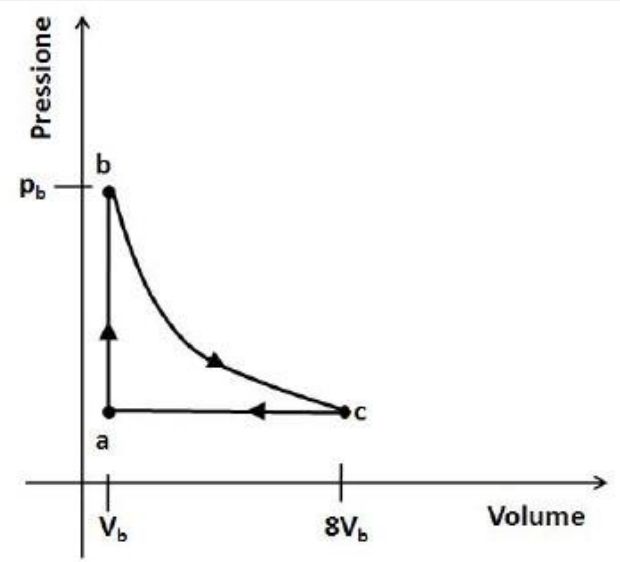
Example

One mole of monatomic gas undergoes the cycle shown in the figure. The BC process is an adiabatic expansion; p_B=1.03 bar, V_B=1.0x10^{-3} m^3, V_C=8V_B. Calculate for the entire cycle: a) the heat supplied to the gas; b) the heat released by the gas; c) the total work done by the gas; d) the efficiency of the cycle; e) the entropy changes.



Example

3 moles of diatomic gas undergo a reversible thermodynamic cycle consisting of an isochoric heating AB, an isothermal expansion BC, an isochoric cooling CD, and finally an isothermal compression DA. Given that the work of the cycle is 5000 J, $p_B/p_C=2$ and that $T_A=250$ K, calculate the temperature T_B and the amounts of heat exchanged for each transformation, and the efficiency of the cycle.

Example

One gram of air, considered as an ideal diatomic gas with molecular weight 29 g/mol, undergoes a cycle consisting of an isobaric expansion, an isothermal compression, and an isochoric process. Given that V_A=1 liter, p_A=1 atm, V_B=2V_A, find the work done by the gas, the heat supplied to the gas, and the entropy change for each transformation.