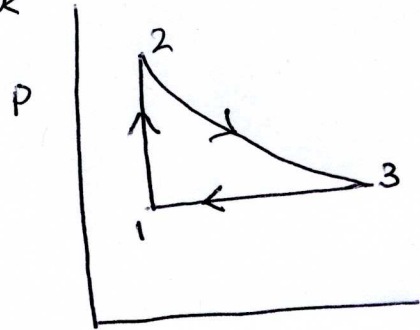


Problem #1

The figure on the right shows a cycle undergone by 1.00 mol of an ideal gas (monatomic). The temperatures are $T_1 = 300\text{ K}$, $T_2 = 600\text{ K}$ and $T_3 = 455\text{ K}$.

undergone



For $1 \rightarrow 2$, what, are (a) heat Q ,
b) the change in internal energy ΔE_{int} ,
c) Work done BY the gas W_{sys}

Repeat the steps for $2 \rightarrow 3$ & $3 \rightarrow 1$

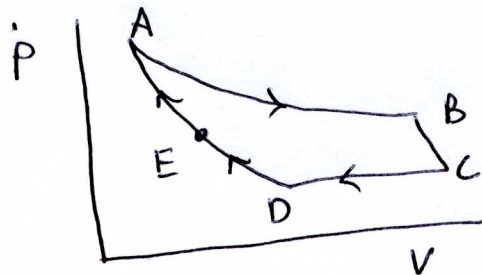
Find ΔE , W_{sys} , Q for the complete cycle.

$P_1 = 1.00\text{ atm}$.
Find pressure & volume at 2 & 3

Problem #2

Figure shows a cycle consisting of five paths

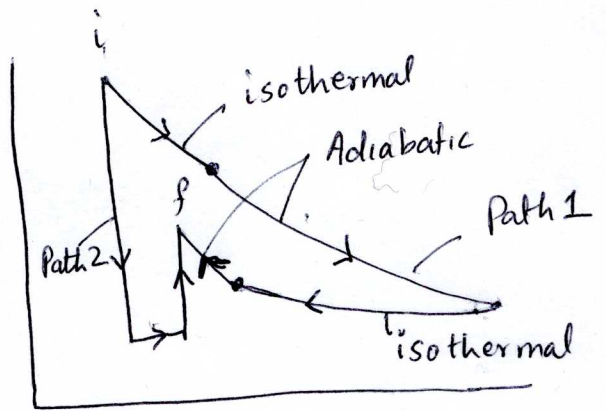
AB is isothermal at 300 K.
BC is adiabatic with $|W| = 5.0\text{ J}$
CD is at a constant pressure of 5 atm, DE is isothermal and
EA is adiabatic with a change in internal energy of 8.0 J.



What is the change in internal energy of the gas along path CD?

Problem #3

Figure 3 shows two paths that may be taken by a gas from an initial point i to a final point f .



Path 1 consists of an ~~adiabatic~~ isothermal expansion (work is 50 J in magnitude), an adiabatic expansion (work is 40 J in magnitude), an isothermal compression (work is 30 J in magnitude) and then an adiabatic compression (work is 25 J in magnitude).

What is the change ~~in~~ in the internal energy of the gas if the gas goes from point i to point f along path 2?