[tex25] Roads from 1 to 2: isothermal, isentropic, isochoric, isobaric
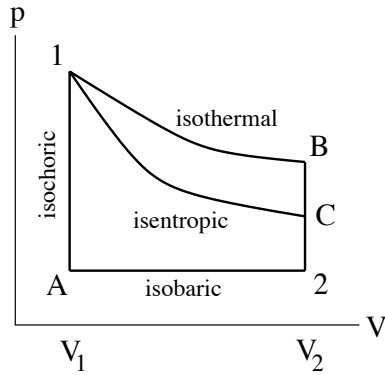
The amount $n = 1$mol of an ideal gas undergoes three different quasistatic processes (see Figure) from the initial state (p_1, V_1, T_1) to the final state (p_2, V_2, T_2):

(i) $1 \rightarrow A \rightarrow 2$;   (ii) $1 \rightarrow B \rightarrow 2$;   (iii) $1 \rightarrow C \rightarrow 2$.

Find the work ΔW done on the system and the heat ΔQ added to the system in each process. Express all results in terms of (T_1, V_1, T_2, V_2).

Solution: