P #18

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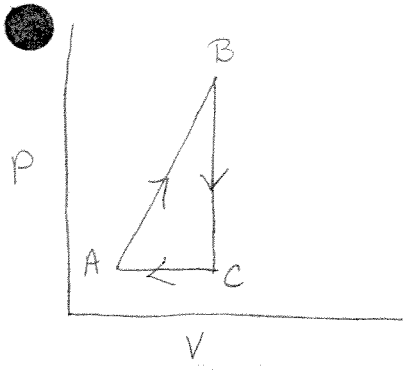

For BC: Q = negative (given)

W = zero ($W = -p \cdot \Delta V$ and $\Delta V = 0$)

ΔU = negative ($\Delta U = Q + W$ means ΔU = negative + 0)

For CA: ΔU = negative (given)

W = positive ($W = -p \cdot \Delta V$ and V decreases)

Q = negative ($\Delta U = Q + W$ so $Q = \Delta U - W$

Q = negative − positive

For AB: W = negative ($W = -p \cdot \Delta V$ and V increases)

ΔU = positive ($\Delta U_{net} = 0$ and $\Delta U_{net} = \Delta U_{AB} + \Delta U_{BC} + U$

$0 = \Delta U_{AB}$ + negative + neg.

Q = positive ($\Delta U = Q + W$ so $Q = \Delta U - W$

= positive − negative