

Homework 5 – Extra Hints.

2: Ch21 P8

- a) For the first part of this problem you need to realize that the formula (21-1) in the book: $\Delta S = \int \frac{dQ}{T}$, in differential form would be: $dS = \frac{dQ}{T}$ (if you integrate both sides you get 21-1 back.) Rearranging this result we get: $TdS = dQ$. We can now integrate both sides of this equation to get: $\Delta Q = Q = \int TdS$.
- b) Here you need to realize that for a monatomic gas you know C_V . (What is it? Look up the section 20-9 about degrees of freedom.)

3: Ch21 P20

- a) comes from the formula given, b) you get from the fact it is an ideal gas, c) means that you need to integrate the formula, since $W = \int p(V) dV$ and $p(V) = p_i e^{(V_i - V)/a}$.
- d) The hint they give you works, but you could also use equation 21-4, where again you must realize you know all the parameters, since it is a monatomic gas.

5: Ch21 P39

- a) Integrate the curve.
- b) This is a little harder, first do $A \rightarrow B$, then $B \rightarrow C$, using $dE_{\text{int}} = Q - W$, so $Q = dE_{\text{int}} + W$.
- c) Here you should realize that what you calculated during b) is Q_H , the cycle from $C \rightarrow D$ and then $D \rightarrow A$ would give Q_L .