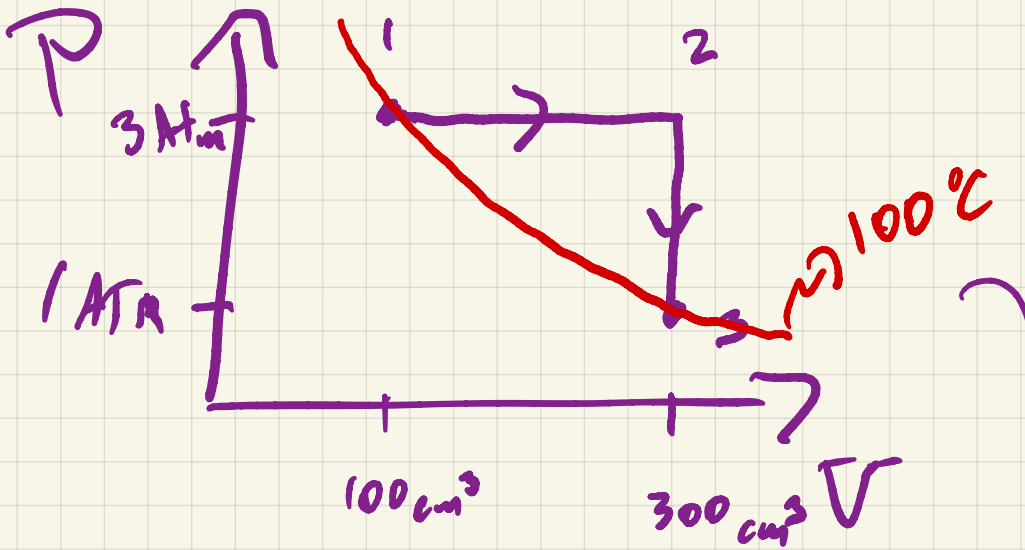
Homework help 2

32)



$10^6\ cm^3 = 1\ m^3$

$1\ Atm = 1{,}01 \times 10^5\ Pa$

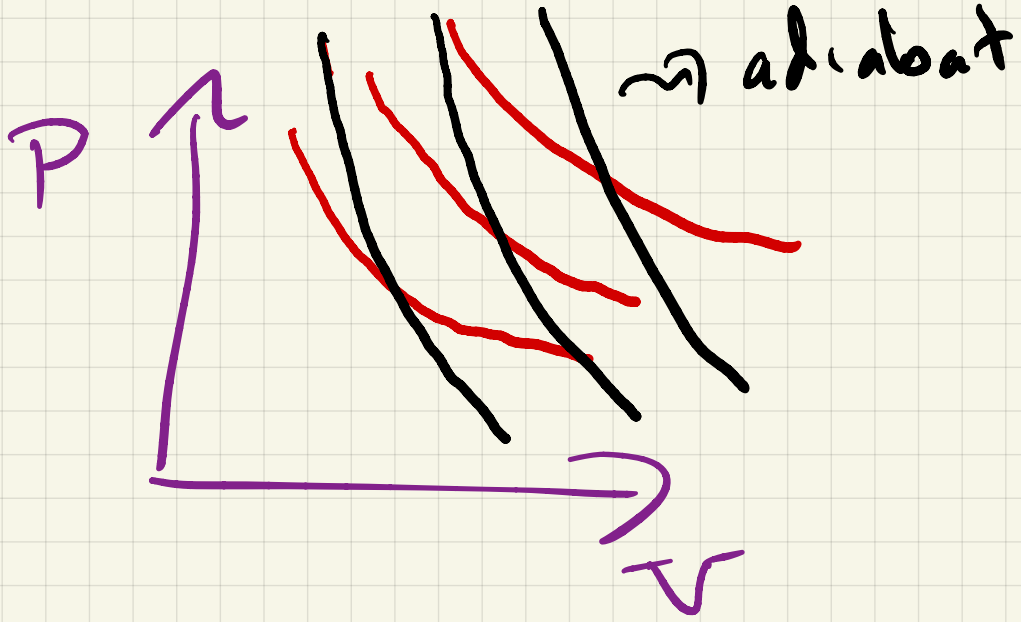
$100\ °C = 373\ K$

$$pV = nRT \Rightarrow n = \frac{P_1 V_1}{R T_1}$$

1-2 $$\frac{V_1}{T_1} = \frac{nR}{P} = \frac{V_2}{T_2} \Rightarrow T_2 = T_1 \frac{V_2}{V_1}$$

a) $Q = n C_p \Delta T$ constant pressure

b) $Q = n C_V \Delta T$ const. Volume



$P\hat{V} = nRT$

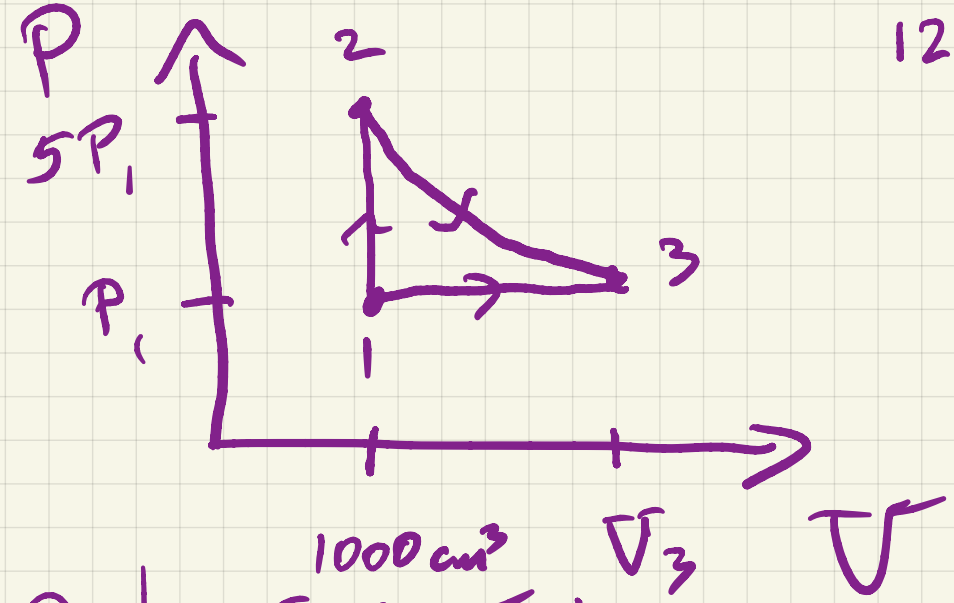
for T const.

$P = \frac{(nRT)}{V} \rightsquigarrow$ const

adiabat is $Q = 0$

$\Delta E_{th} = W_{ext} + Q$

62)



120 mg $H_e = 4\ g/mole$

$n = \frac{M}{M_{mol}}$

$PV = nRT$

@ 1

$P_1 = \frac{nRT_1}{V_1}$

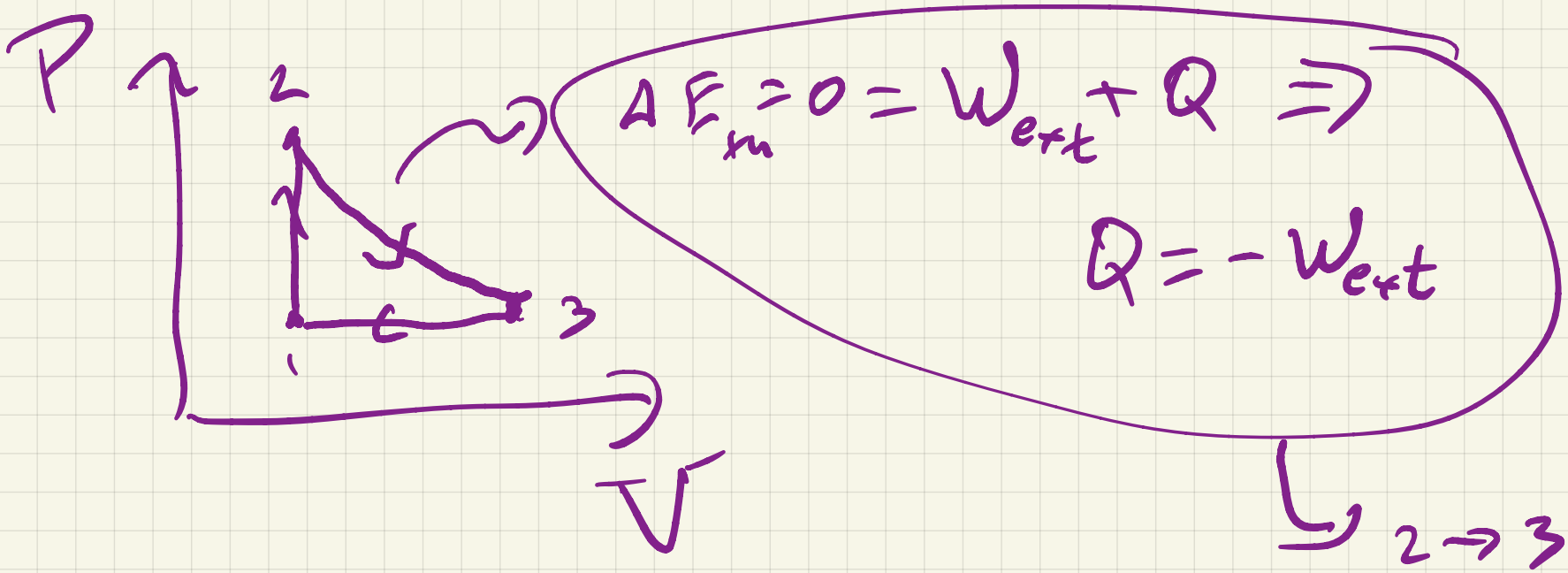
	P	V	T
1	Find	✓	✓
2			
3			

$W_{ext} = -\int P\,dV$

1→2 $W_{ext} = 0$

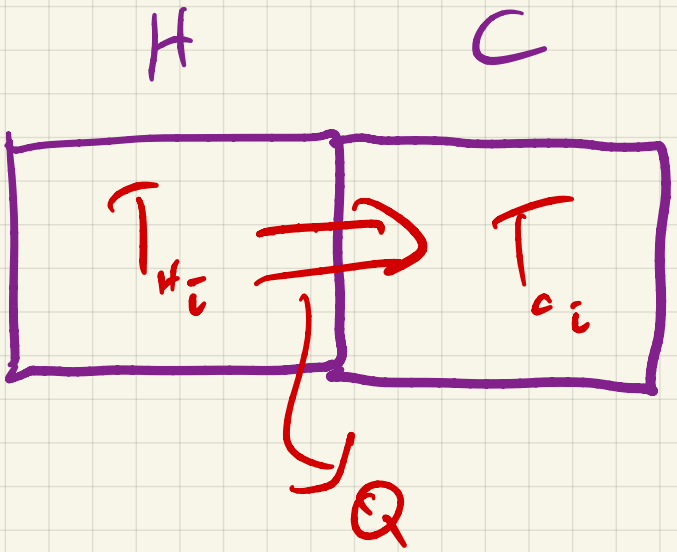
2-3 $W_{ext} = -nRT \ln \frac{V_F}{V_i}$

3-1 $W_{ext} = -P\Delta V$



$1 \to 2 \quad Q = n C_v \Delta T$

$3 - 1 \quad Q = n C_p \Delta T$



$$Q_H + Q_C = 0$$

$$Q_C = -Q_H$$

$$Q_H = -Q_C$$

$$\rightsquigarrow M_H c_H (T_F - T_{H_i}) + M_C c_C (T_F - T_{C_i}) = 0$$

$$Q = Mc\Delta T$$