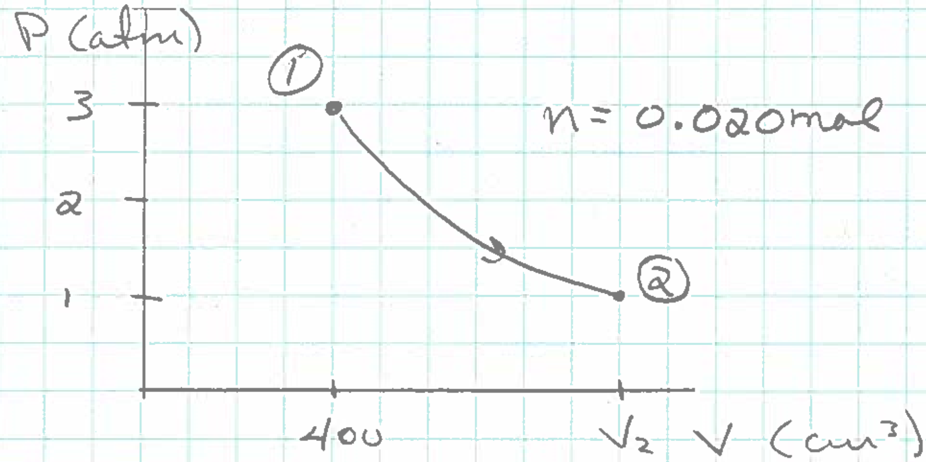

from the graph, $P \propto \frac{1}{V} \Rightarrow$ T = const. (isothermal

(However, we'll see that an adiabatic process looks like an isothermal only a little steeper)

a.) $P_1 = 3$ atm $= 3.039 \times 10^5$ Pa.

$V_1 = 400\ cm^3 \left(\frac{1\ m}{100\ cm}\right)^3 = 4 \times 10^{-4}\ m^3$

$PV = nRT \Rightarrow T_1 = \frac{P_1 V_1}{nR} = 731\ K = 458\ °C$

NOTE $T_1 = T_2$

b.) $1 \rightarrow 2$ T = const.

So, $PV = nRT$ = const

So, $P_1 V_1 = P_2 V_2 \Rightarrow V_2 = \frac{P_1}{P_2} V_1 = 1200\ cm^3$

Note, in part b, we can use pressure in atm. and volumes in cm³, but in part a since we are multiplying or dividing by R, we must use MKS units.