CHINOI Quiz 7

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J.a) Step 1:

dv = 0

d U= DU

first Law!

=> dv = dq + dw m m m

=> dU=dg=nC,dT => | AU=nC,DT | -0

5 (H+m) m/2

Stopa:

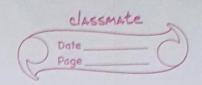
dg=0 ; dU=-AU

Pext = P

>> dv=dq+dw >> dv=dw=-Pent dv

=> - DU = - PAV

=> | AU = PAV - 11.



Sulestituting (1) in (1),

$$\Rightarrow \Delta T = \left(\frac{\rho}{\gamma c_{\nu}}\right) \Delta V$$
 aus.

b) The state of gas is defined by different state variables. og, P, V, T, initial energy, etc.

Of extleast one of these state variables change, the state of the gas is changed as

In the given two steps, we can see that the volume of the gas changes in step 2. i., even though du=0 in the process combined, the state of the gas changes.

c) After completion of both steps, $\Delta V = 0$ as for any ideal gas, internal energy depends solely on the temperature. Thus, as $\Delta V = 0 \iff \Delta T = 0$, hence, temperature remains constant and there is no net change.