

12.) $n=5 \text{ mol}$ $V_1=2 \text{ liter}$ N_2

$1 \rightarrow 2$ $T_2=T_1$ $V_2=\frac{V_1}{2}$

$2 \rightarrow 3$ $p_3=p_2$ $T_3=300\text{K}$ $V_3=V_1$

$3 \rightarrow 1$ $V_3=V_1$ $T_3 \rightarrow T_1 \downarrow$

a.) $T_1=?$

b.) $p-V$ diagram

c.) $\Delta E_b=?$ $W_g=?$ $Q_{le}=?$

$pV=nRT$

$E_b = \frac{f}{2} nRT$

$\Delta E_b = Q + W$

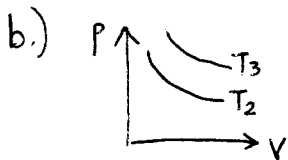
$Q_{le} = -Q$

$W_g = -W$

$\delta W = -pdV$

a.) $pV=nRT$ a $2 \rightarrow 3$ átmenetre p, n, R állandók $\rightarrow \frac{V}{T} = \text{állandó}$

T_2



c.) $1 \rightarrow 2$ $\Delta T=0 \rightarrow \Delta E_b=0$ $\Delta E_b=Q+W \rightarrow Q=-W$

$\delta W = -pdV = -\frac{nRT}{V} dV$

$W = \int_{V_1}^{V_2} -\frac{nRT}{V} dV = \dots$ $W_g = -W$ $Q_{le} = W$

$2 \rightarrow 3$ $\Delta E_b = \frac{f}{2} nR\Delta T = \frac{5}{2} nR\Delta T = \dots$

$W = -p\Delta V = \dots$ $Q = \Delta E_b - W = \dots$

$W_g = -W$ $Q_{le} = -Q$

$3 \rightarrow 1$ $W=0$ ($\Delta V=0$) $\Delta E_b=0$ a teljes körfolyamatra!

$W_g=0$

$\Delta E_{b3 \rightarrow 1} = -\Delta E_{b2 \rightarrow 3}$

$Q = \Delta E_b$ $Q_{le} = -Q$

Összeítve a körfolyamatra: $Q_{le} = \sum Q_{le}$ $W_g = \sum W_g$
 részfolyamatokból

$\Delta E_b = 0$
 körfolyamatra