Notas clase f3b-20190404-U02C03-ciclos

$$p V^{\gamma} = cte$$

$$pV = nRT \rightarrow p = \frac{nRT}{V}$$

$$\frac{nRT}{V} V^{\gamma} = cte$$

$$T \frac{V^{\gamma}}{V} = cte \rightarrow \boxed{T V^{\gamma-1} = cte}$$

1) $V = cte$ $A \rightarrow B$ $P_B = 3 P_A$.

	P	V	T	n
A	P_A	V_A	T_A	n_A
B	$3P_B$	V_A	$T_B = 3T_A$	n_A
C	P_A		T_B	n_A
D				n_D

$$\frac{P_A V_A}{n_A R T_A} = \frac{P_B V_B}{n_B R T_B} \Rightarrow T_B = \frac{P_B}{P_A} \cdot T_A$$

$=$ $+$

T	Q	W	ΔU
1	ΔU	0	$C_V n (T_B - T_A)$
2	W	$nRT_B \ln \frac{V_B}{V_A}$	0
3	$\Delta Q = W$	$P_A (V_A - V_C)$	$C_V n (T_A - T_C)$

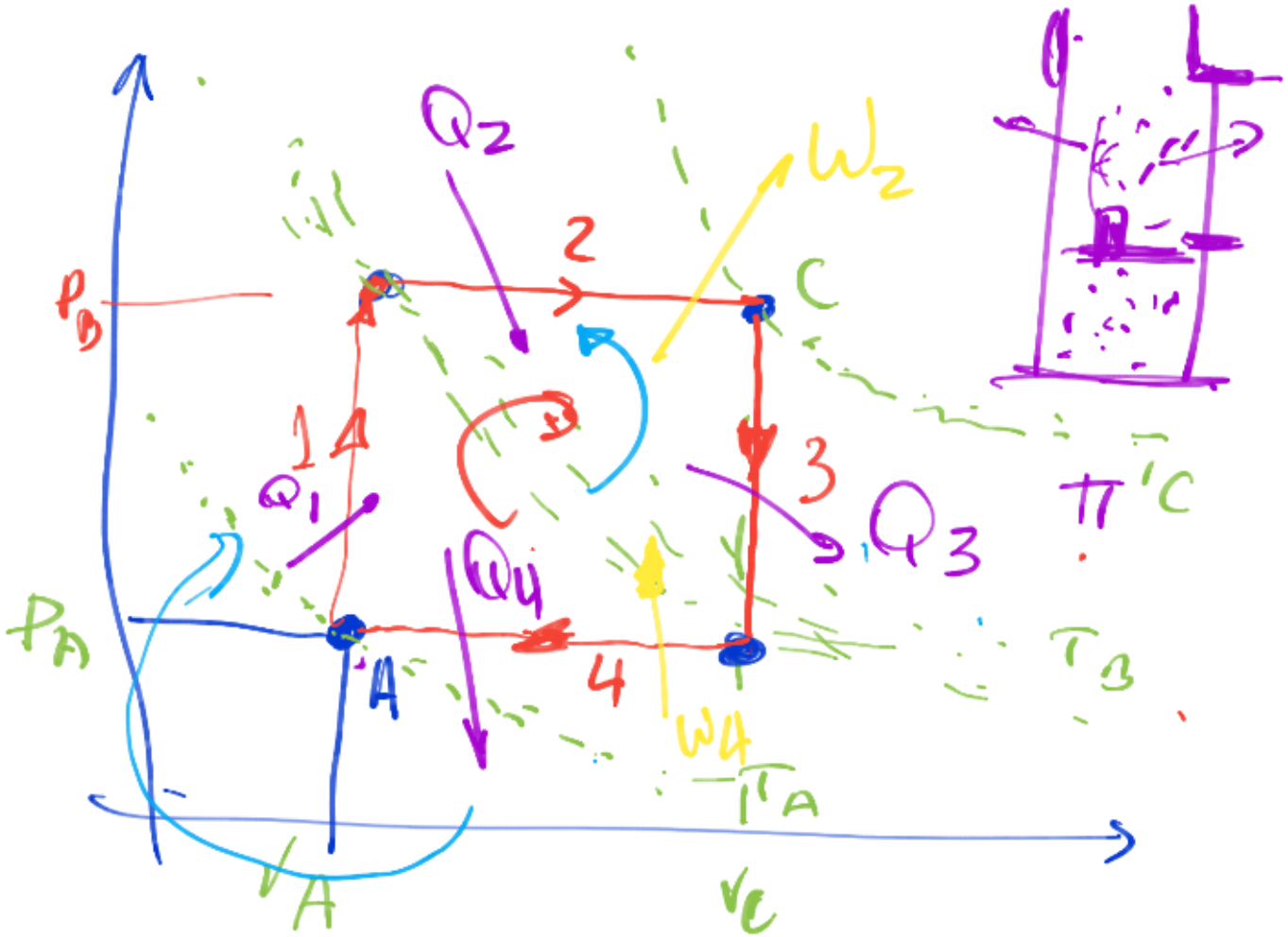
$$\Delta U = C_V n \Delta T$$

$$\Delta U = C_V n (T_B - T_A) + C_V n (T_A - T_C)$$

$$= C_V n (T_B + T_A + T_A - T_C) = 0$$

$$Q = W + \Delta U \neq 0$$

Lavoro ciclo



$|Q_1 + Q_2|$ ~~$|Q_3 + Q_4|$~~

$|W_2| > |W_3|$

$W_2 > 0$ $\quad W_3 < 0$

$|W_N = W_2 - W_3 < W_2|$

$\Psi = \omega$

$$\eta = \frac{\omega_N}{Q_{>0}} = \frac{\sum_{i=1}^{n} \omega_i}{Q_{>0}}.$$

$$\boxed{\eta = \frac{\omega_N}{Q_{>0}}}$$