ANOTAÇÕES DA MESA DIGITALIZADORA – AULA DE 03-11-2021

Conservação energia → $W = \vec{F} \cdot \vec{n}$

$= F n \cos\theta$

$-K = \frac{1}{2} m v^2$

$-U_g = mgh$

$-U_{el} = \frac{1}{2} k x^2$

$\vec{F} \rightarrow$ const → var ; $\therefore W_R = \Delta K$ conservativa / não-conservativa

$W_R = \sum W_{F_{cons}} = \Delta K$

$-\Delta U = \Delta K$

$\vec{F}_{cons} \rightarrow \Delta E_{mec} = \Delta K + \Delta U$

$W_R = \sum W_{F_{cons}} + \sum W_{F_{n\text{-}cons}} = \Delta K$

$-\Delta U$; $-\Delta E_{int}$

$\therefore W_{fa} = \Delta E_{mec}$

Termodinâmica → T ?

Eq. Térmico

$\boxed{\Delta U = Q - W}$ 1ª lei TD

Quase estático

$\int_{U_i}^{U_f} dU = \int_{Q_i}^{Q_f} dQ - \int_{V_i}^{V_f} dW$

$\Delta U = \int_0^Q dQ - \int_0^V dW$

$(U_f - U_i)$

$Q = mc\Delta T$

$\boxed{W = p\Delta V}$ → $dV = p\,dV$

$dW = F\,dx$

$= PA\,dx$

$dW = P\,dV$

$W = \int P\,dV$

$\boxed{W(p,V) \rightarrow dW = \frac{\partial W}{\partial V} + \frac{\partial W}{\partial p}}$

Sistema → P, V, T, Q, W

* gás ideal $PV = nRT$

inicial $P_i V_i = nRT_i$

final $P_f V_f = nRT_f$

$T_i = T_f \Rightarrow P_i V_i = P_f V_f = \text{const}$

$\therefore \int dW = \int \frac{nRT}{V}\,dV$ T. const $p = \frac{nRT}{V}$

$W = nRT \int_{V_i}^{V_f} \frac{dV}{V} = nRT(\ln V_f - \ln V_i)$

$W = nRT \ln \frac{V_f}{V_i}$