Chapter 3

Equilibrium occurs when $\frac{\partial S_{total}}{\partial q_A} = 0$ ← Einstein solid

generalize a bit

$$\frac{\partial S_{total}}{\partial U_A} = 0$$

$$\frac{\partial (S_A + S_B)}{\partial U_A} = 0$$

$U_B = U - U_A$

$dU_B = -dU_A$

$$\frac{\partial S_A}{\partial U_A} + \frac{S_B}{\partial U_A} = 0$$

$$\frac{\partial S_A}{\partial U_A} - \frac{\partial S_B}{\partial U_B} = 0$$

$$\boxed{\frac{\partial S_A}{\partial U_A} = \frac{\partial S_B}{\partial U_B}}$$

$$\frac{\partial S}{\partial U} = \frac{1}{T}$$

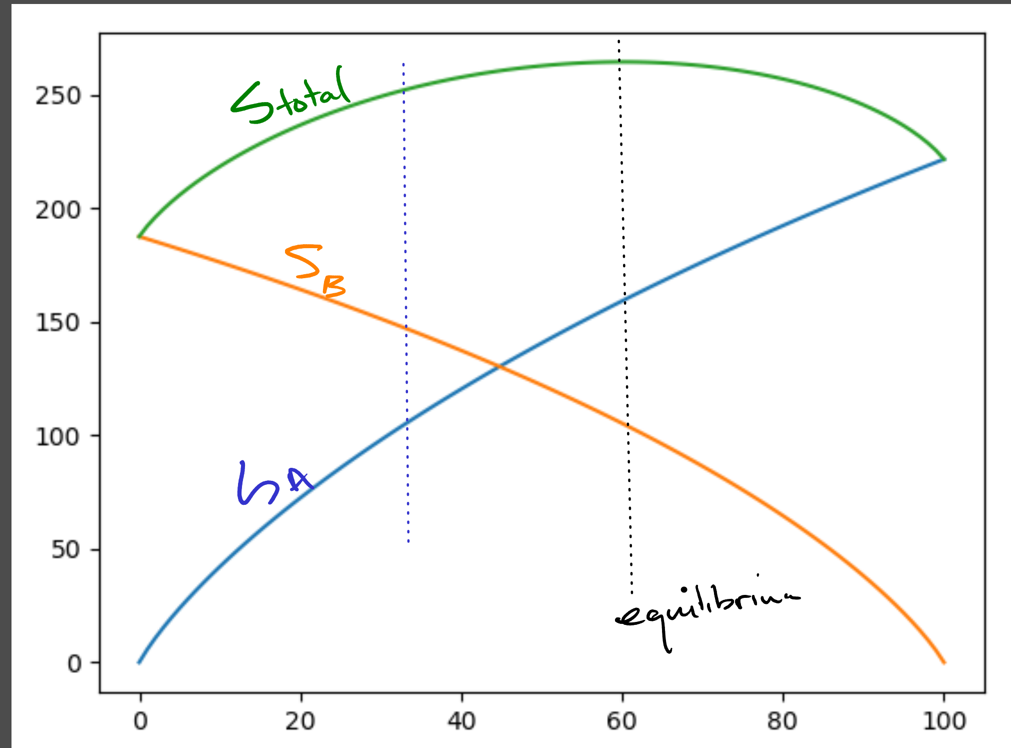
$$T = \left(\frac{\partial S}{\partial U}\right)^{-1}_{N,V}$$

this the definition of temperature

HW: 1, 3

Anaconda
miniconda

Entopy



q_A