Thermodynamics

HEAT → movement
Action. (Kinetic)

1st Law - Heat is work and J or kJ

$R = 0.08206 \frac{L \cdot atm}{Mole \cdot K}$

$R = 8.314 \frac{J}{mole \cdot K}$ OR $8.314 \times 10^{-3} \frac{kJ}{Mole \cdot K}$

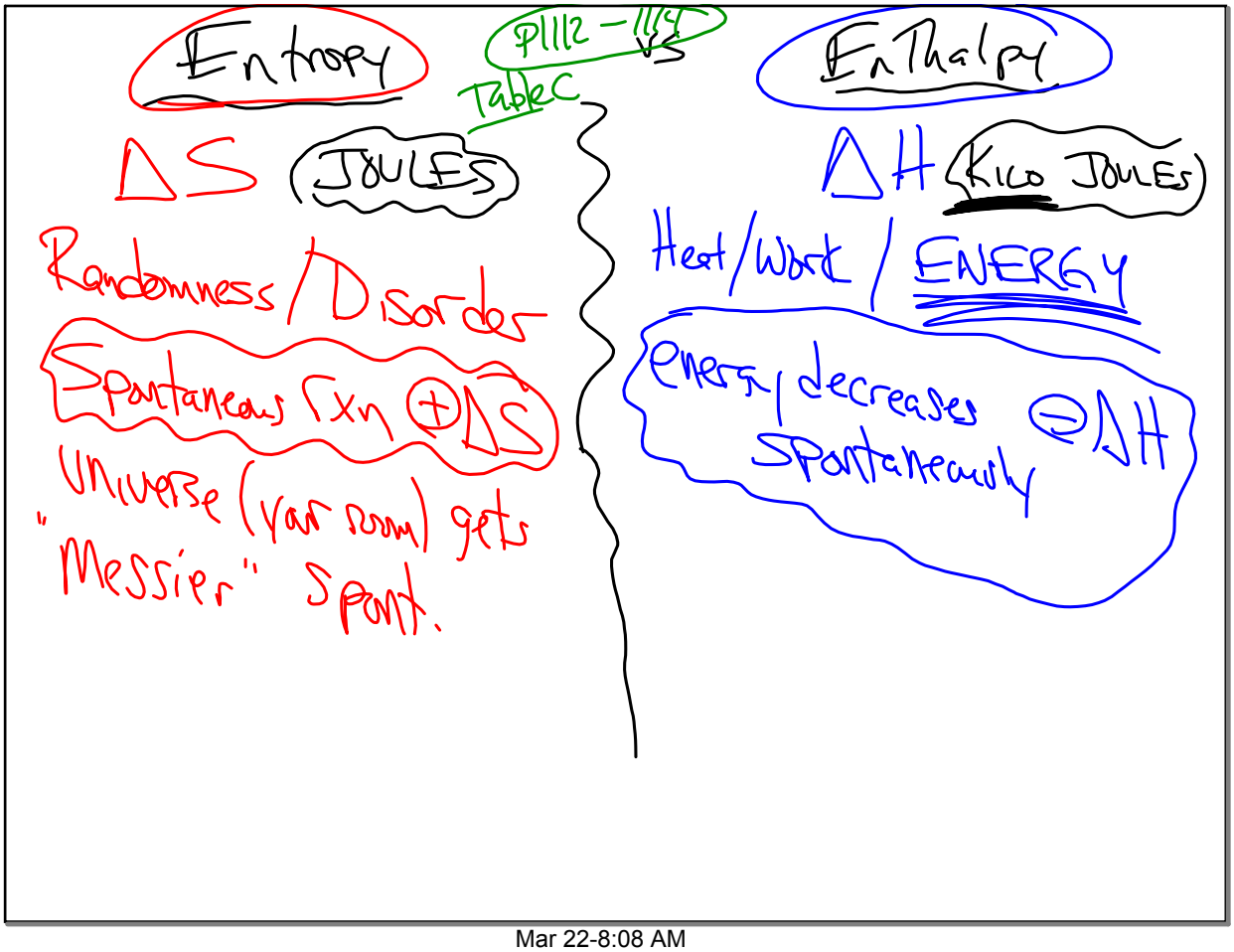
Mar 22-7:39 AM

2nd Law Heat travels Spontaneously from Hot → Cold

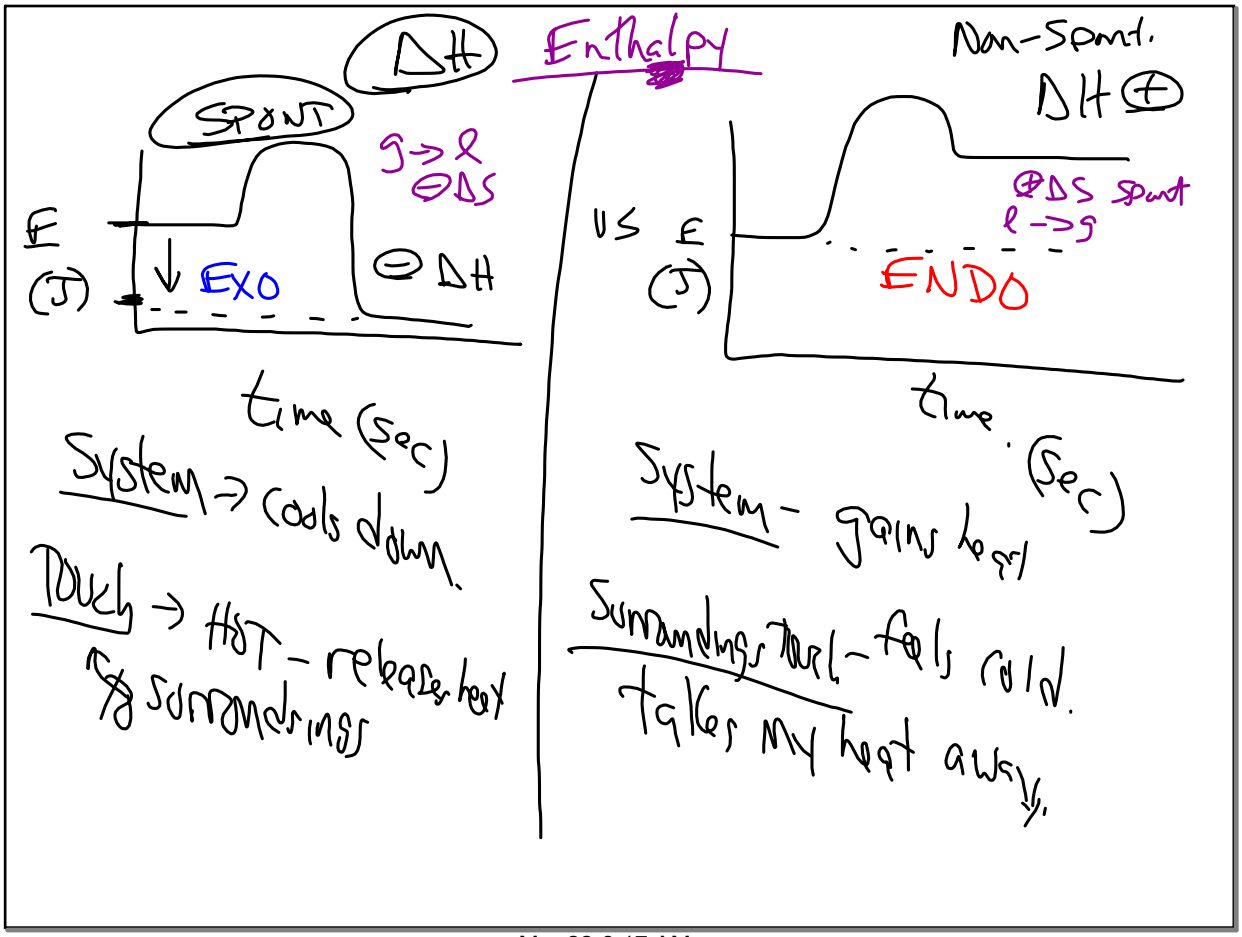
3rd Law → Anything in its elemental (normal) form has an energy of formation = 0

ΔH_f

Mar 22-8:04 AM



Mar 22-8:08 AM



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Entropy

① Translational Motion → Moving
Changes location

② Rotational motion - stays in same area → spins around

③ Vibrational → one spot → shakes

Mar 22-8:22 AM

$$N_{2(g)} + 3H_{2(g)} \rightleftarrows 2NH_{3(g)} \quad 25^{\circ}C,\ 1\ atm$$

4 moles gas → 2 moles gas

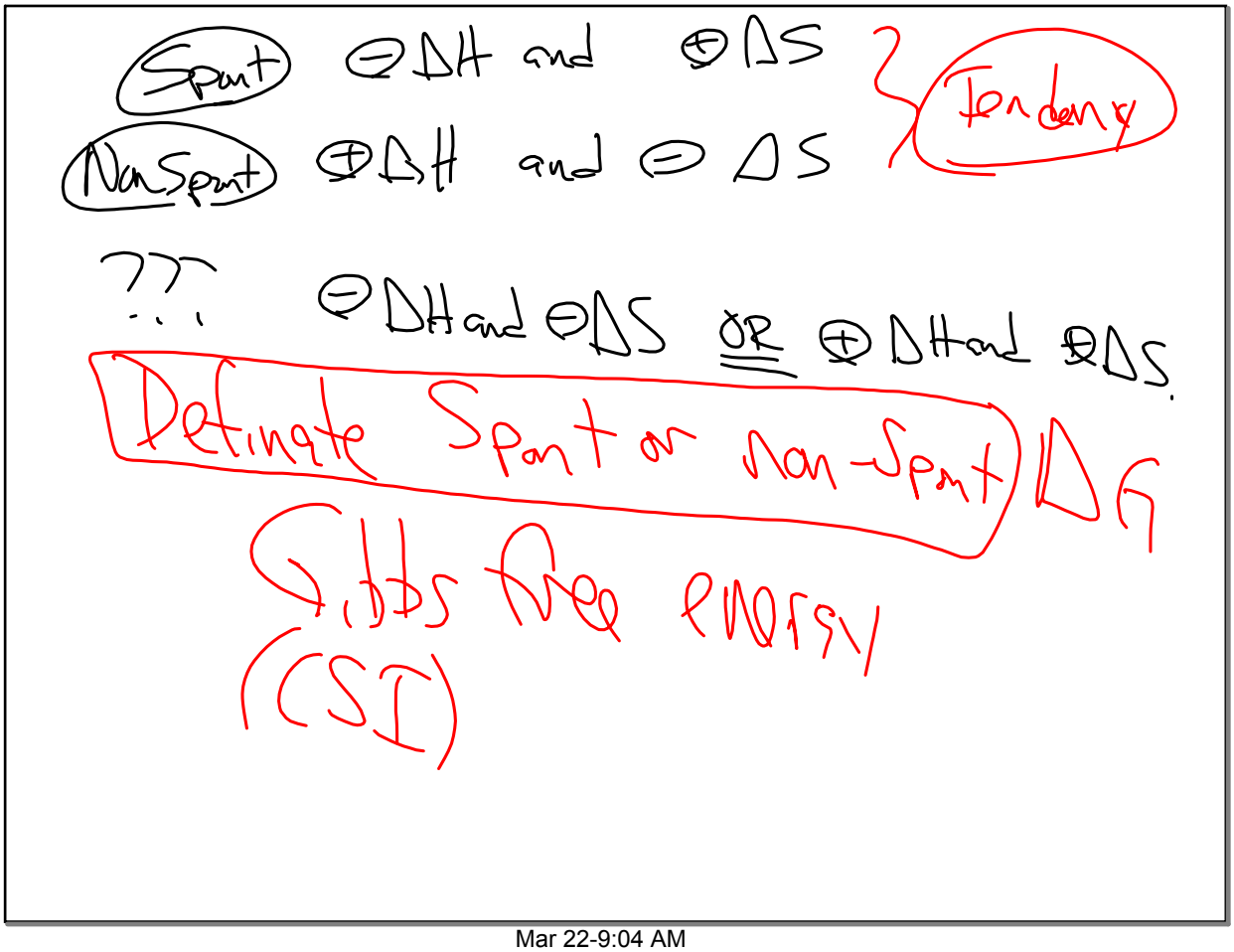
entropy ↓ $-\Delta S$

Find ΔS_{rxn} $= n\Sigma\Delta S_{prod} - n\Sigma\Delta S_{react}$

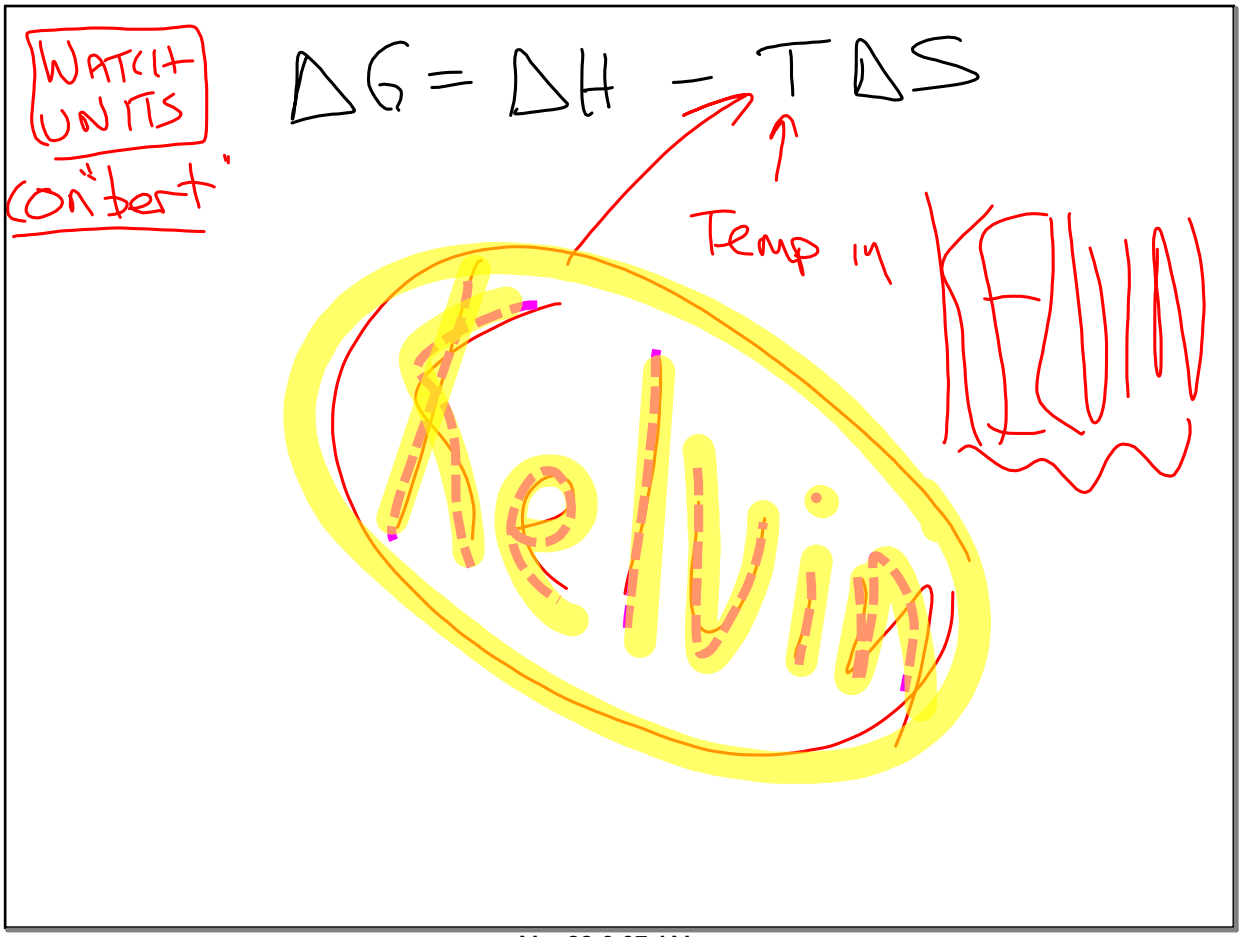
$\Delta S_{rxn} = [2(192.5)] - [1(191.5) + 3(130.58)]$

$\Delta S = -198.24\ J$

Mar 22-8:36 AM



Mar 22-9:04 AM



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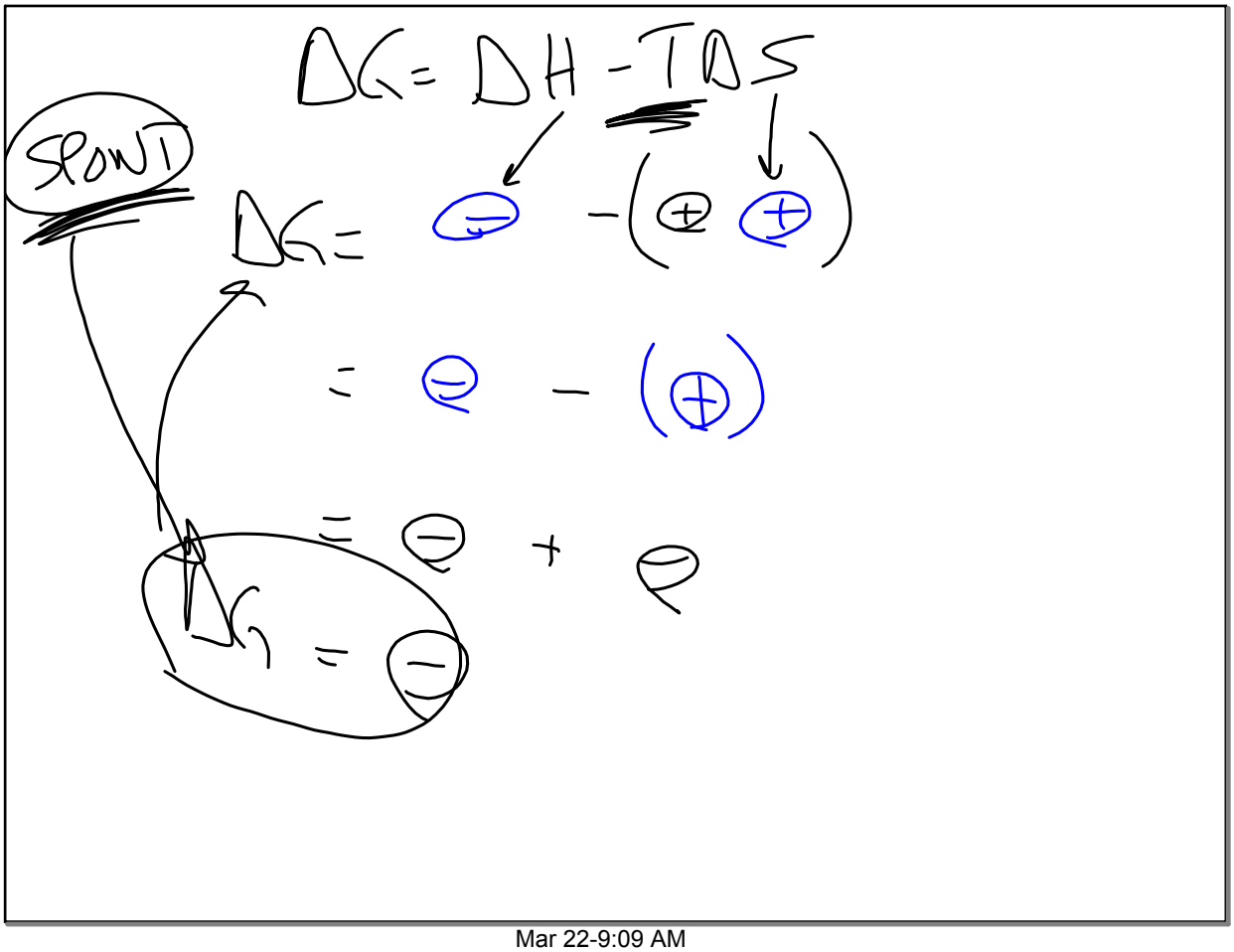

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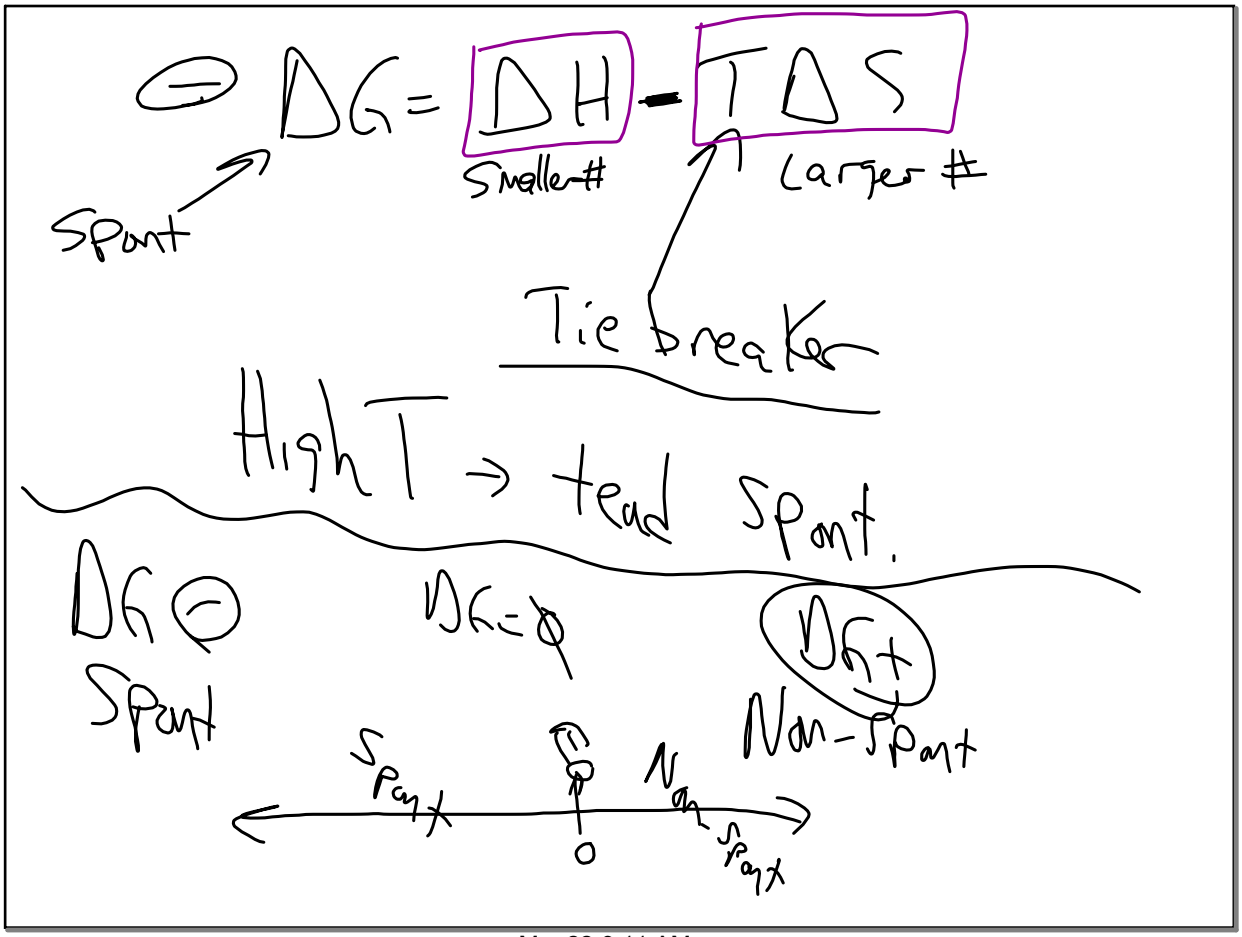

Mar 22-9:11 AM

Spont ⟶ nonspont

occurs when

$\Delta G = 0$

EQUILIBRIUM

Mar 22-9:14 AM

19/ 41, 50, 58 a+b

Mar 22-9:15 AM