

Clase 13 13 Septiembre 2021

Título de la nota

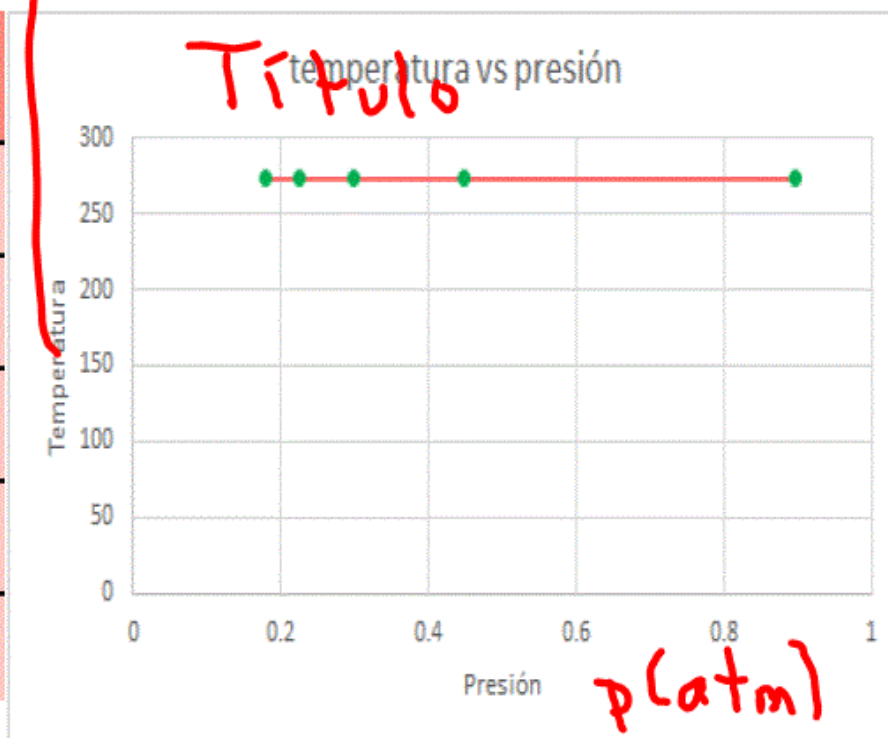
13/09/2021

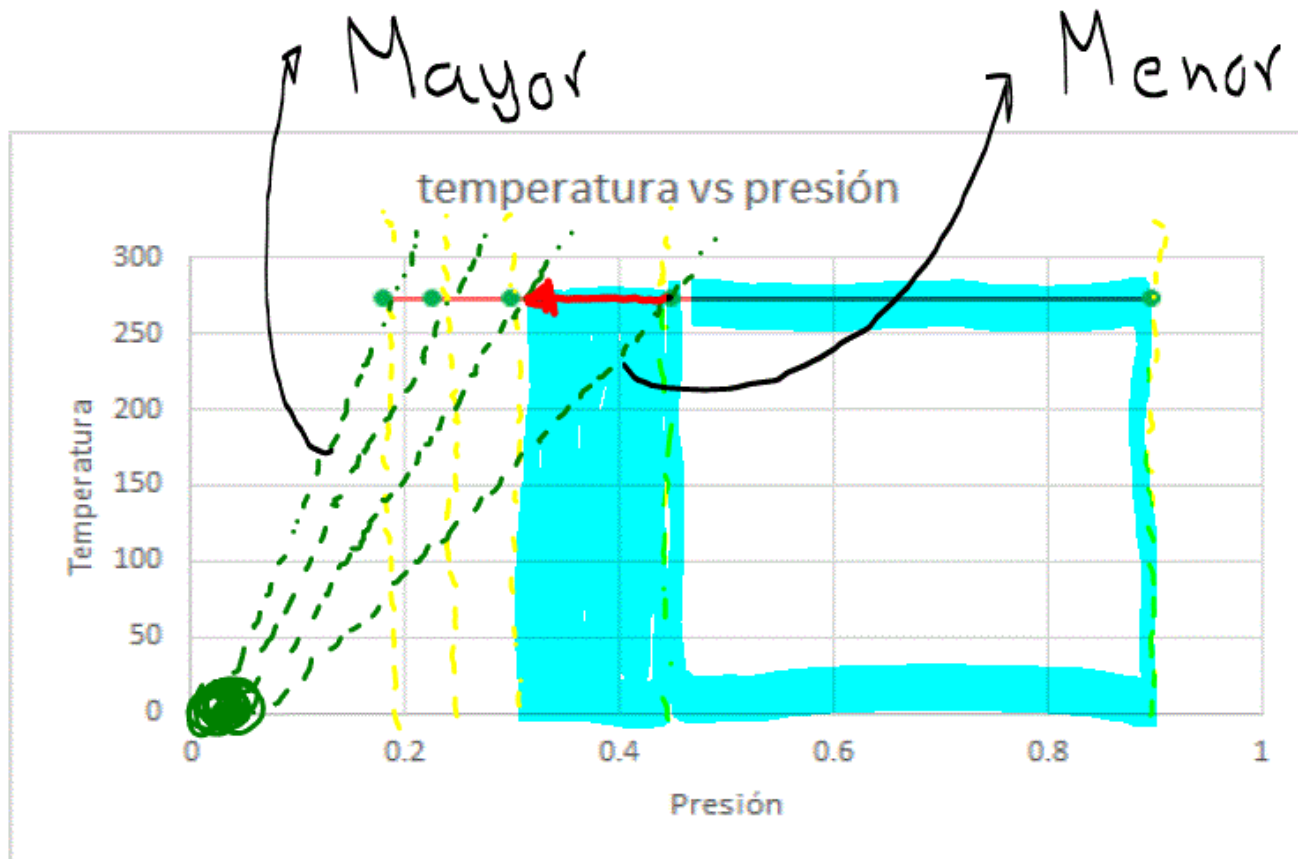
Título

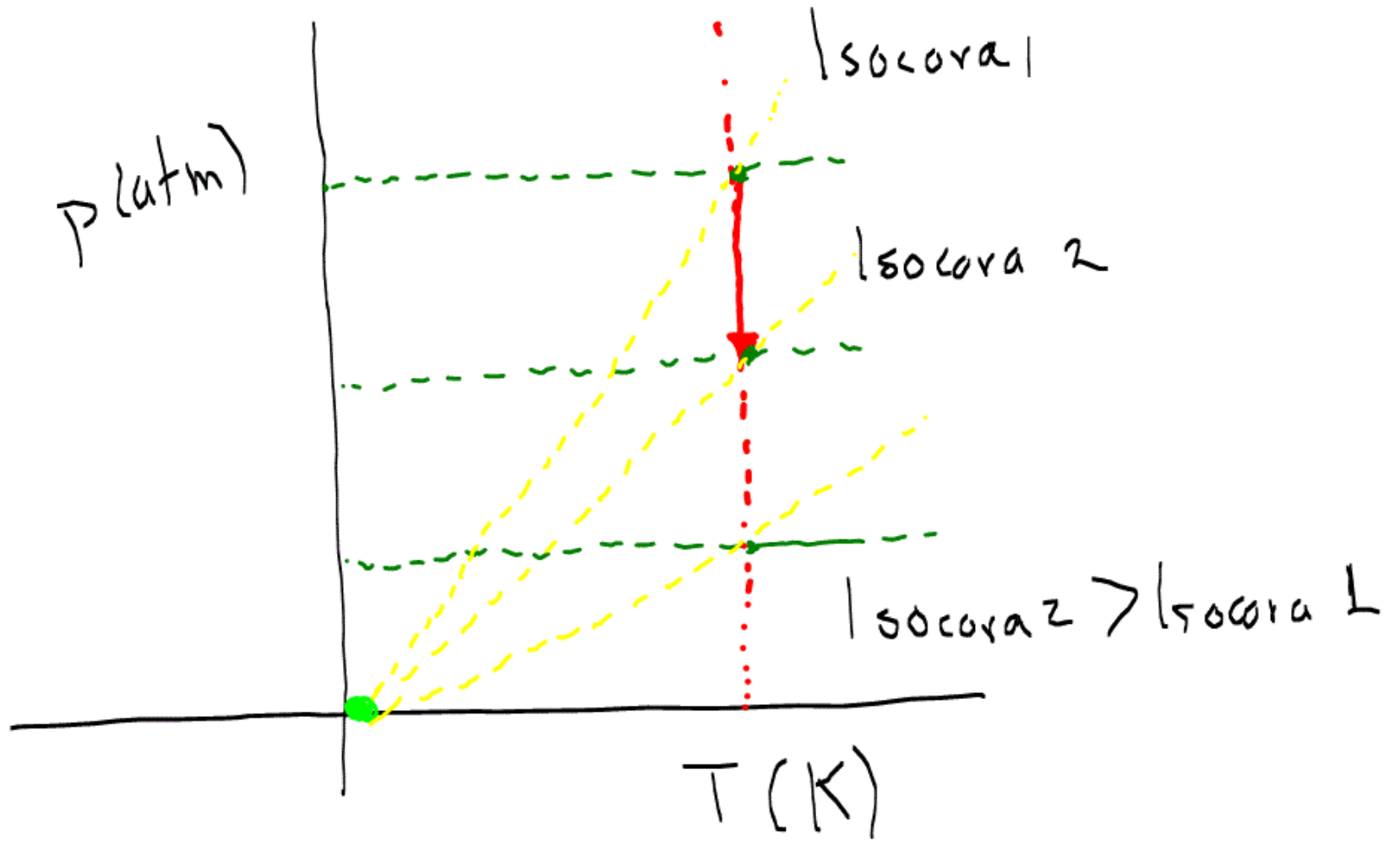
Cantidad de materia	Temperatura (K)	Constante del gas	Presión (atm)	Volumen
1 mol	273.15 K	0.082 $\frac{\text{atm} \cdot \text{L}}{\text{mol} \cdot \text{K}}$	0.896 atm	25 L
1 mol	273.15 K	0.082 $\frac{\text{atm} \cdot \text{L}}{\text{mol} \cdot \text{K}}$	0.448 atm	50 L
1 mol	273.15 K	0.082 $\frac{\text{atm} \cdot \text{L}}{\text{mol} \cdot \text{K}}$	0.299 atm	75 L
1 mol	273.15 K	0.082 $\frac{\text{atm} \cdot \text{L}}{\text{mol} \cdot \text{K}}$	0.224 atm	100 L
1 mol	273.15 K	0.082 $\frac{\text{atm} \cdot \text{L}}{\text{mol} \cdot \text{K}}$	0.179 atm	125 L

$T(K)$
GRÁFICA 1 (TEMPERATURA VS PRESIÓN)

Temperatura	Presión
273.15 K	0.896 atm
273.15 K	0.448 atm
273.15 K	0.299 atm
273.15 K	0.224 atm
273.15 K	0.179 atm

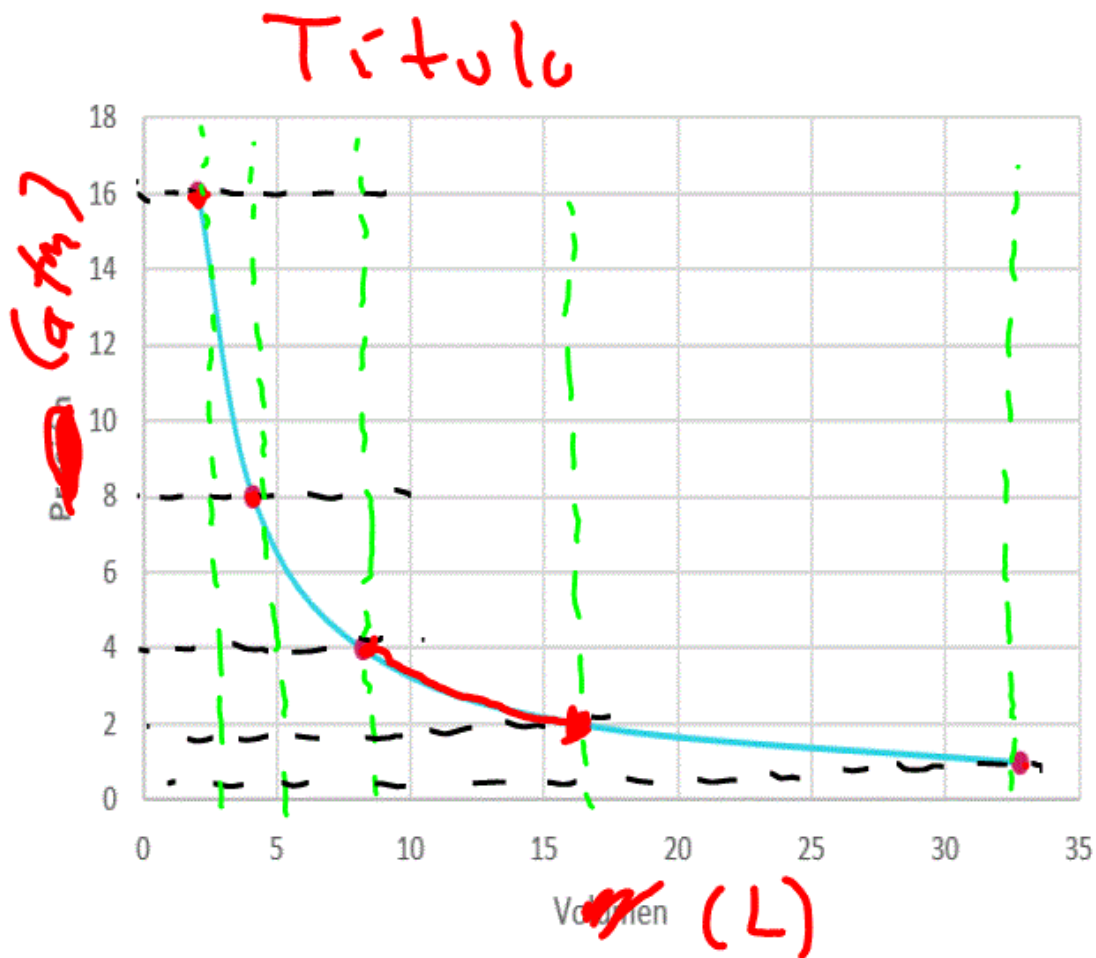


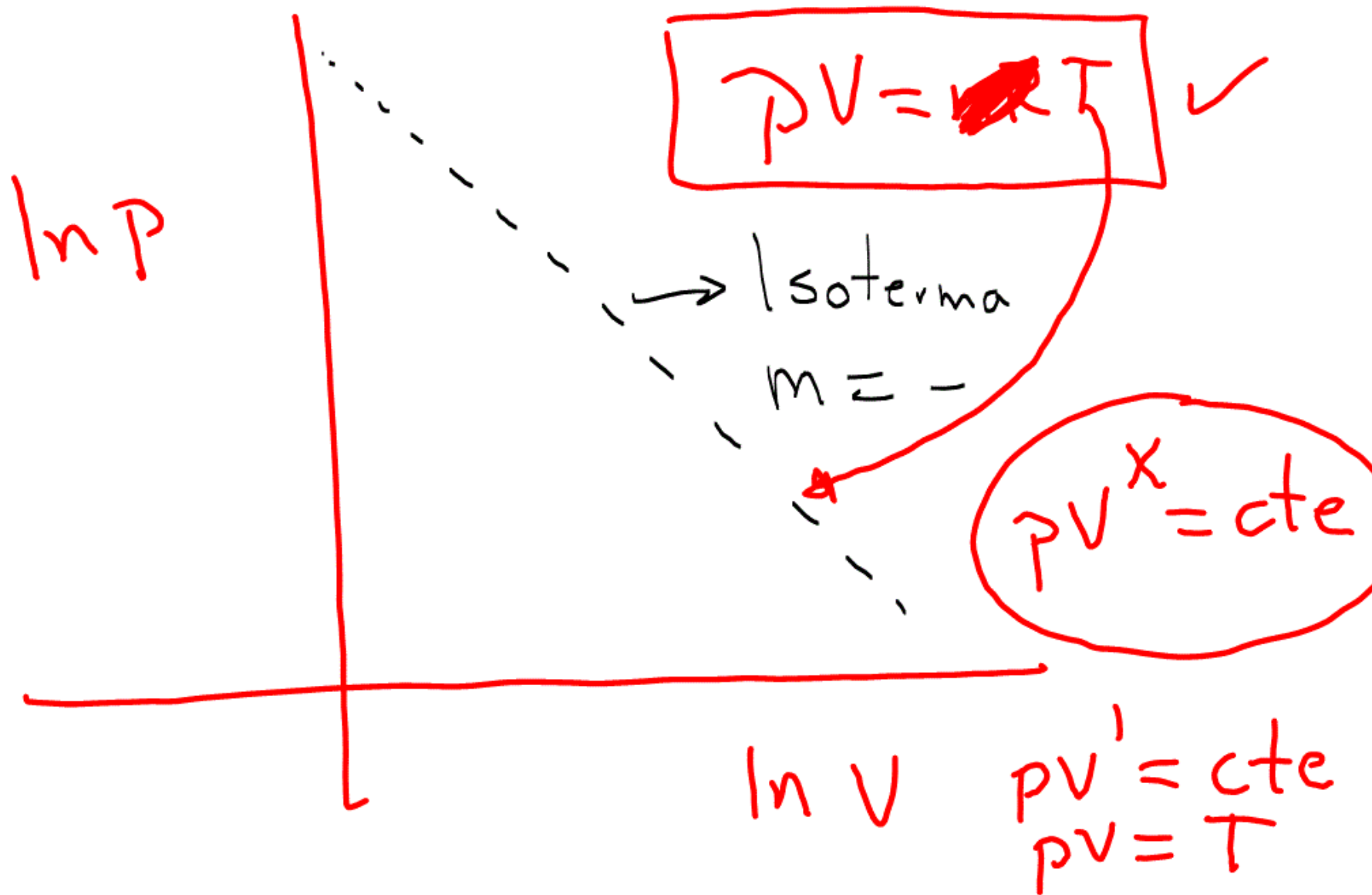


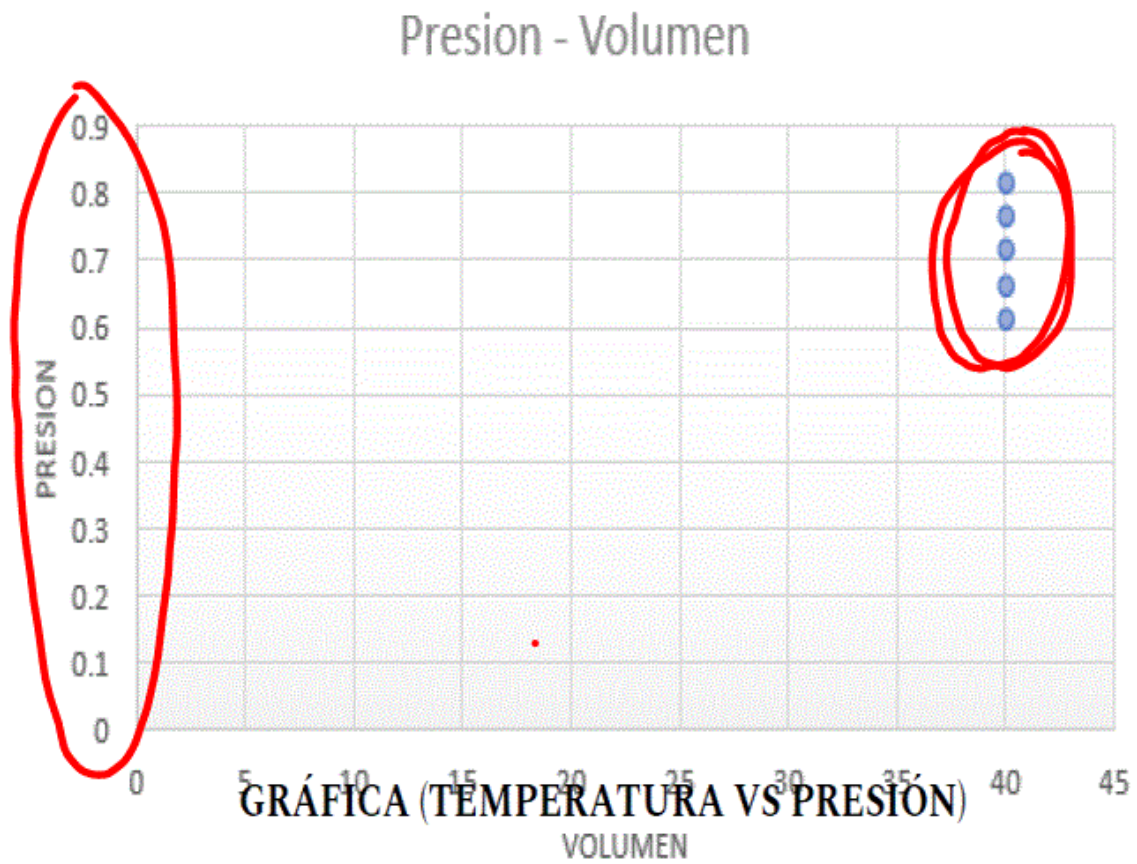


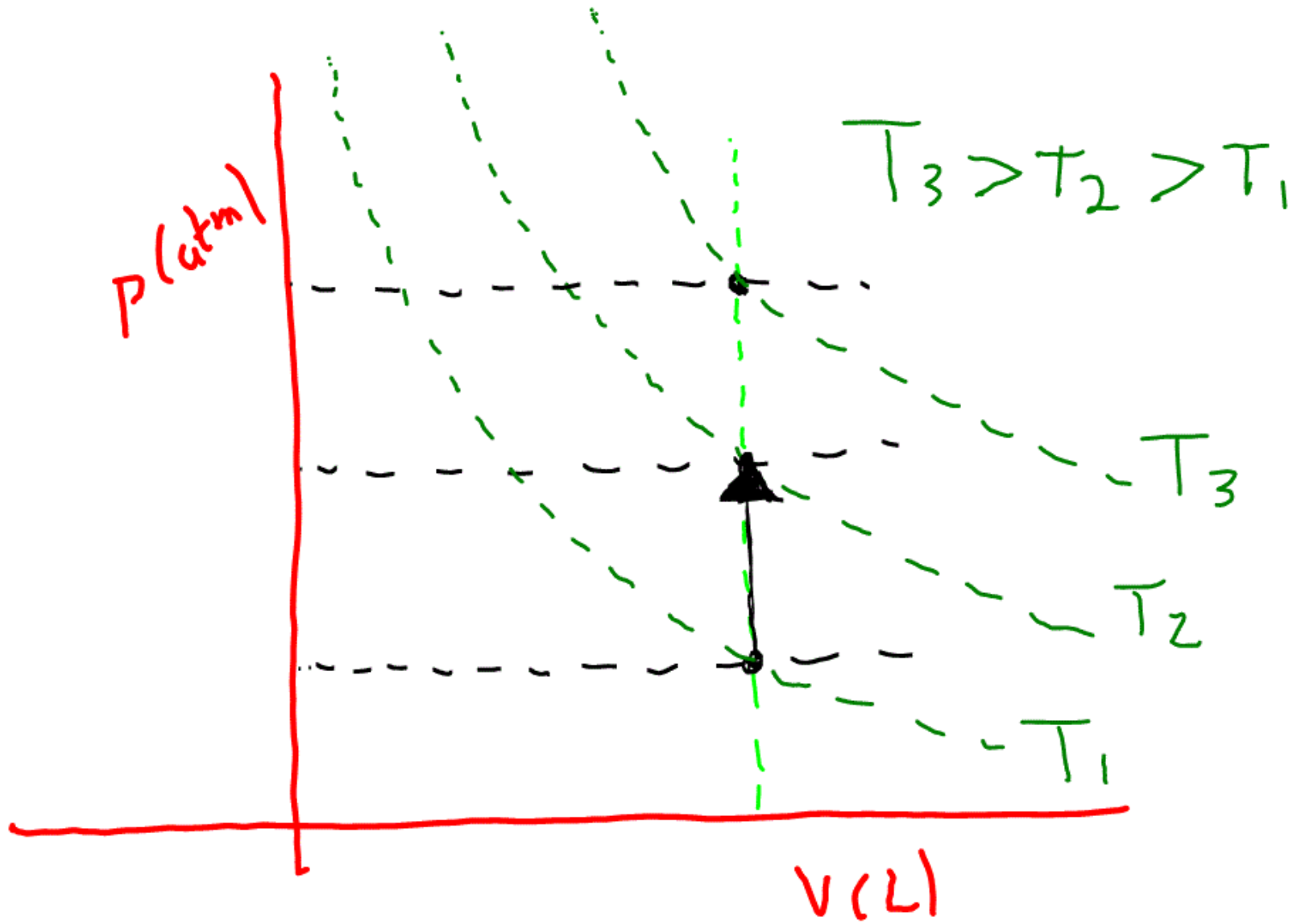
GRÁFICA (PRESIÓN VS VOLUMEN)

Presión (atm)	Volumen (L)
1 atm	32.8 L
2 atm	16.4 L
4 atm	8.2 L
8 atm	4.1 L
16 atm	2.05 L



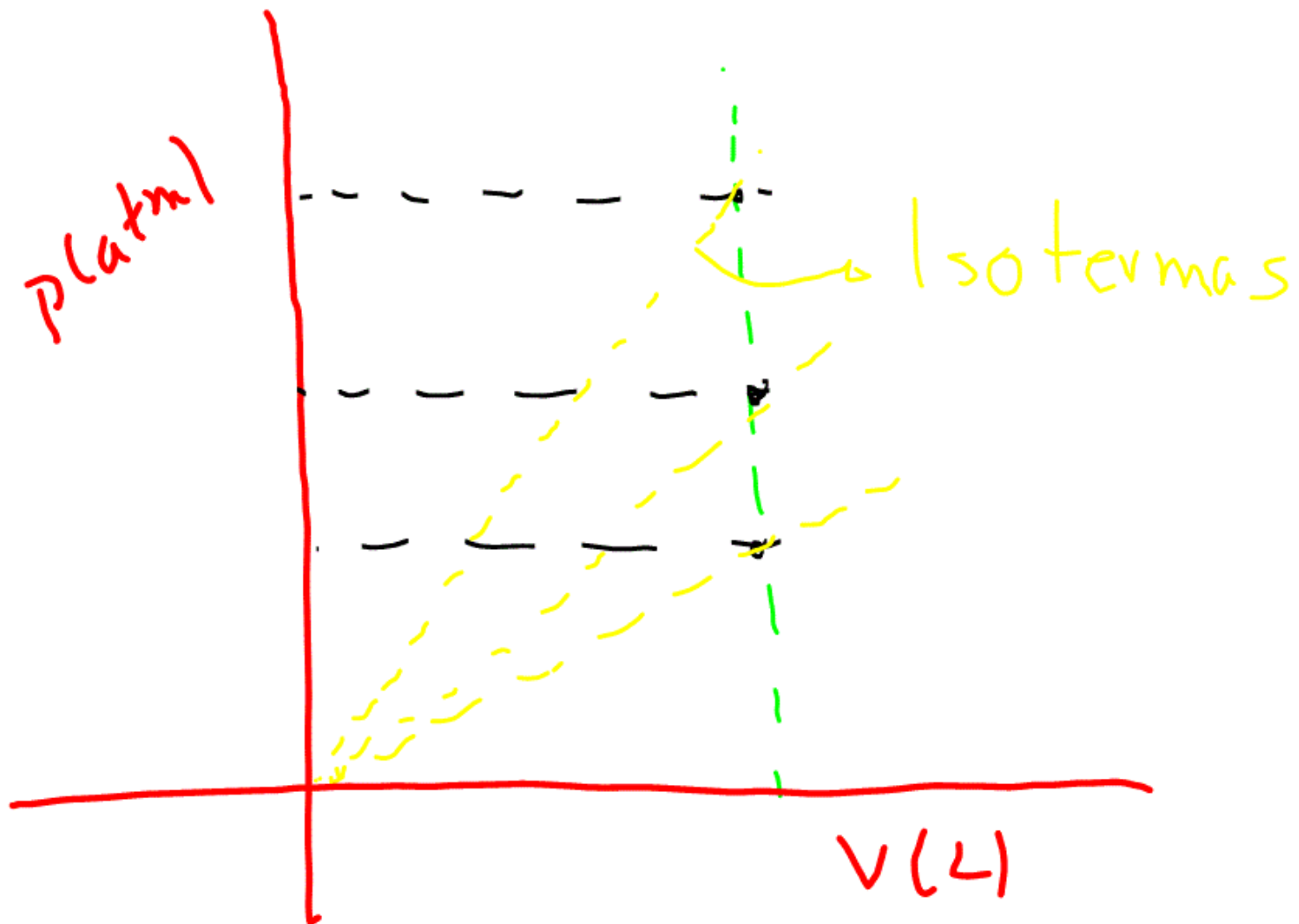






TEMPERATURA	PRESION
300 [*] K	0.615 atm
325 [*] K	0.666 atm
350 [*] K	0.717 atm
375 [*] K	0.768 atm
400 [*] K	0.82 atm

$$\frac{400}{300} = \frac{0.82}{0.615}$$



$$K = ^\circ C + 273.15 K$$

$$32^\circ F = 0^\circ C$$

$$212^\circ F = 100^\circ C$$



$$y = ^\circ F \quad x = ^\circ C$$

$$^\circ F = ^\circ C$$

$$y = m x + b$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{212^\circ F - 32^\circ F}{100^\circ C - 0^\circ C}$$

$$^{\circ}\text{F} = \left(1.8 \frac{^{\circ}\text{F}}{^{\circ}\text{C}}\right)^{\circ}\text{C} + b$$

$$^{\circ}\text{F} = \left(1.8 \frac{^{\circ}\text{F}}{^{\circ}\text{C}}\right)(0^{\circ}\text{C}) + b$$

$$32^{\circ}\text{F} = \left(\frac{1.8^{\circ}\text{F}}{^{\circ}\text{C}}\right)(0^{\circ}\text{C}) + b$$

$$b = 32^{\circ}\text{F}$$

$$\textcircled{\text{°F}} = \left(\frac{1.8 \text{ °F}}{\text{°C}} \right) \left(\text{°C} \right) + 32 \text{ °F} \textcircled{\text{F}}$$

$$\text{°F} = 1.8 \text{ °C} + 32$$

X

$$dU = n \bar{C}_v dT$$

Primera Ley Termodinámica

$$dU = \sum_{i=1}^n \text{energias sistema}$$

$$dU = \cancel{E_{\text{potencial}}} + \cancel{E_{\text{cinética}}} + E_R + E_V + E_T$$

Systema es estático y cerrado

$$dU = E_R + E_V + E_T$$

$$\int_1^2 dU = \int_1^2 \delta q - \int_1^2 \delta w$$

$$\boxed{\Delta U = q - w}$$

$\Delta U =$ Función estado

q } Funciones { Rev. (múltiples pasos)
 w } Trayectoria { Irrev. (1 solo paso)

$$\Delta U = n \bar{c}_v \Delta T$$

Isotérmico

$$\Delta U = n \bar{c}_v \Delta T \quad \Delta T = 0$$

$$\Delta U = 0$$

$$\Delta H = n \bar{c}_p \Delta T \quad \Delta T = 0$$

$$\Delta H = 0$$

$$\Delta U = q - w = 0$$

$$0 = q - w$$

$$q = w$$