

Exercice 4

Gaz Parfait

Adiabatique et indéformable

$$Q = 0 \quad W = 0$$

$$P_i = 8 \text{ bar}$$

$$P_f$$

$$T_i = 298 \text{ K}$$

$$T_f$$

$$V_i = 2 \text{ l}$$

$$V_f = 5 \text{ l}$$

1) $m = ?$

$$M = 44 \text{ g} \cdot \text{mol}^{-1}$$

$$P \cdot V = n R T$$

$$n = \frac{P \cdot V}{R T} = \frac{8 \times 10^5 \times 2 \times 10^{-3}}{8,314 \times 298}$$

$$m = n \times M$$

$$= 0,646 \times 44$$

$$= 28,4 \text{ g}$$

$$= 0,646 \text{ moles}$$

2) Enthalpie $\Delta H = C_p \Delta T = 0$ car $\Delta T = 0$

$$\Delta H = 0$$

$$\Delta U = Q + W$$

$$= 0 + 0$$

$$= 0$$

3) En isotherme $P_i V_i = P_f V_f$

$$\Leftrightarrow P_f = \frac{P_i V_i}{V_f}$$

$$\Leftrightarrow P_f = \frac{8 \times 10^5 \times 2 \times 10^{-3}}{5 \times 10^{-3}} = 320000$$