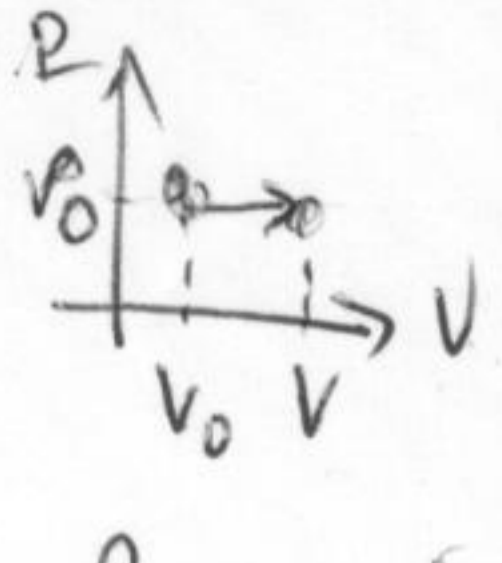
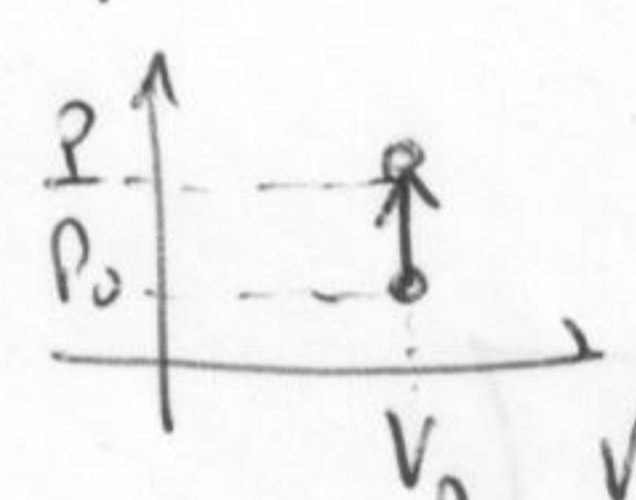
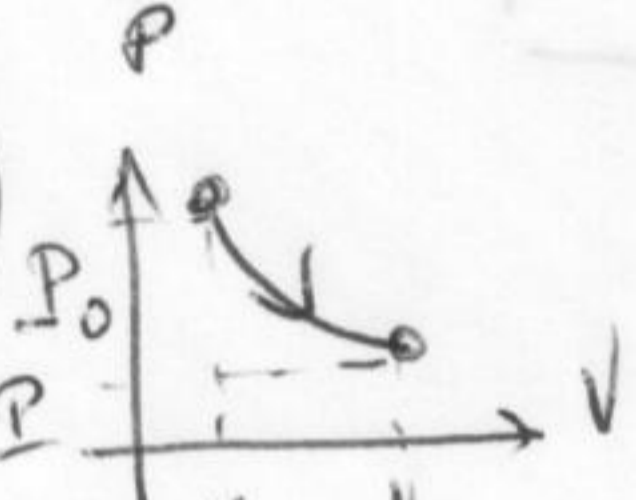
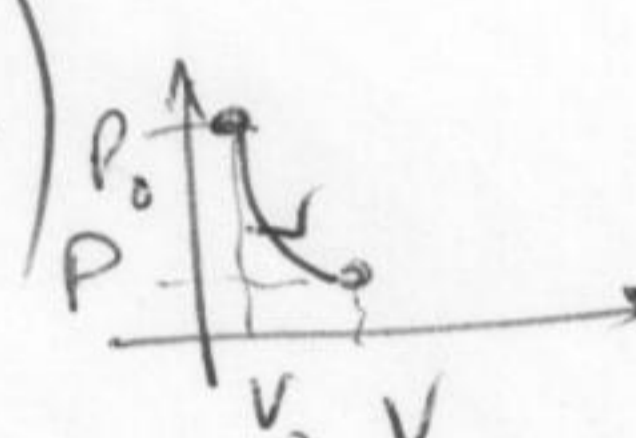


Gabarito dos exercícios em sala de aula (Nov/Dez)

1) a)  
$$\Delta U = \frac{3RT_0}{2} \left( \frac{V}{V_0} - 1 \right)$$
 
$$\Delta Q = \frac{5RT_0}{V_0} (V - V_0)$$

b)  
$$\Delta U = \Delta Q = \frac{3RT_0}{P_0} (P - P_0)$$

c)  
$$\Delta Q = 0$$
 
$$\Delta U = -\Delta W$$
 
$$\Delta U = \frac{3}{2} (PV - P_0V_0)$$

d)  
$$\Delta U = 0$$
 
$$\Delta Q = \Delta W \Rightarrow \Delta Q = P_0V_0 \ln \frac{V}{V_0}$$

2) a) 
$$W = \frac{PV}{2}$$
 ((pelo fig) horário

b) 
$$\Delta Q_{AB} = \frac{5PV}{2}$$

c) 
$$\Delta Q_{BC} = -\frac{3PV}{2}$$

d) 
$$\Delta Q_{CB} = -\frac{5PV}{4}$$

e) 
$$\Delta Q_{BA} = \frac{3PV}{4}$$

f) 
$$\eta = \frac{2}{13}$$

g) 
$$\eta_c = \frac{3}{4} (\eta_c > \eta)$$

3) a) 
$$W_{i \rightarrow f} = -3191,6 \text{ J} \quad \infty - 3200 \text{ J} = -\Delta U$$

b) 
$$\Delta U = \frac{3}{2} R (100) + \frac{5}{2} R (100) = 3200 \text{ J}$$

4) a)  $V_f = 400$   
 b)  $T_f = 250 \text{ K}$   
 c)  $\Delta W \approx 1100 \text{ J}$   
 d)  $\Delta U \approx 1100 \text{ J}$

5) a)  $\gamma_{AB} = 1,07$  e  $\gamma_{CD} = 1,15$   
 b)  $W_T = W_{AB} + W_{CD} + W_{BC} = -1429 + 2000 + 1600 = 2171 \text{ J}$

6) a)  $l = 225 \times 10^{-7} \text{ m}$   
 b)  $f = \bar{v} / l = 5^{11} / 2,25 \times 10^{-7} = 2,27 \times 10^9 \text{ s}^{-1}$   
 c)  $d = 1 / n_v^{1/3} = 1 / (2,25 \times 10^{25})^{1/3} = 3,4 \times 10^{-9} \text{ m} < l$

7)  $n = 194$

8) a)  $T_f = 330 \text{ C}$  e  $\Delta S = 1,75 \text{ cal/K}$

9)  $\eta = 0,55$  e  $\eta_c = 0,49$  (e golpe!)

10)  $f = 2,62 \times 10^{-3}$  (0,262%)

11)  $\bar{v} = 445 \text{ m/s}$

12)  $v_{rms} = 483 \text{ m/s}$

13)  $v_p = 395 \text{ m/s}$

14) a)  $l = 1,1 \times 10^{-7} \text{ m}$  b)  $\tau_{axa} = 4,1 \times 10^9 \text{ s}^{-1}$

15) a)  $\eta = 1 - \frac{250}{400} = 0,375$  (37,5%)

b)  $Q = 200 \text{ J}$

c)  $W = 75 \text{ J}$

16)  $\eta = 25,4 \%$

17) a)  $W = 942 \text{ J}$ ; b)  $Q_f = 4282 \text{ J}$  e c)  $Q_f = 3340 \text{ J}$

18) a)  $W = 53 \text{ J}$  e b)  $Q_f = W + Q_f \Rightarrow Q_f = 303 \text{ J}$   
 $K = \frac{Q_f}{W}$