

Esercizio 1

$$P = \frac{P_1 V_1 + P_2 V_2}{(V_1 + V_2)} \quad T = \frac{T_1 T_2 (P_1 V_1 + P_2 V_2)}{(P_1 V_1 T_2 + P_2 V_2 T_1)}$$

Esercizio 2

$$\gamma = 31/21$$

Esercizio 3

$$L_1 = 10 \text{ cm} \quad Q \approx 2993 \text{ J}$$

Esercizio 4

$$P_{\text{REF}} \approx 215 \text{ W}$$

Esercizio 5

$$W = 5/2 P_1 V \left(1 - \left(\frac{P_0}{P_1} \right)^{\frac{\gamma-1}{\gamma}} \right)$$

Esercizio 6

$$v = \sqrt{\frac{2nRT_i}{m(\gamma-1)} \left(1 - \left(\frac{V_i}{V_f} \right)^{\gamma-1} \right)} \approx 94,7 \text{ m/s}$$

Esercizio 7

$$c = \frac{6NkT_0}{T^2} \left(1 + e^{\frac{T}{T_0}} \left(\frac{T}{T_0} - 1 \right) \right)$$

Esercizio 8

- a) $W = \frac{1}{2} \alpha V_0^2 (\eta^2 - 1)$
- b) $\Delta U = \alpha V_0^2 (\eta^2 - 1) / (\gamma - 1)$
- c) $c = \frac{1}{2} R (\gamma + 1) / (\gamma - 1)$

Esercizio 9

$$c = \frac{R(x-\gamma)}{(x-1)(\gamma-1)}$$

$x=0 \Rightarrow$ isobara, $x=1 \Rightarrow$ isoterma, $x=\gamma \Rightarrow$ adiabatca, $x=\infty \Rightarrow$ isocora

Esercizio 10

$$PV^n = \text{costante}, \text{ dove } n = 1 + \frac{R}{k c_V}$$

Esercizio 11

$$I_V = \frac{\rho_G \pi R^2 V (L_f - c_G T_G)}{\rho_A c_A T_A}$$

Esercizio 12

$$C = nR \left(\frac{5}{2} + \frac{1}{BV} \right)$$

Esercizio 13

$$h_1 = h_0 \frac{(P_A S + mg)}{[P_A S + (M + m)g]}$$