

Tabela de Fórmulas

$$\begin{aligned}
 E &= \rho g V & P + \frac{1}{2} \rho v^2 + \rho g y &= cte & \frac{dV}{dt} &= v A = cte & \frac{F}{A} &= Y \frac{\Delta L}{L} & \frac{F}{A} &= P = -B \frac{\Delta V}{V} \\
 Q &= mc \Delta T = nC \Delta T \\
 Q &= \pm mL & C_p &= C_v + R & PV &= nRT = Nk_B T = \frac{N}{3} m v_{rms}^2 & n &= \frac{N}{N_A} = \frac{m}{m_{molar}} & \gamma &= \frac{C_p}{C_v} \\
 \Delta E_{term} &= Q + W = Q - \int p dV & P_{adiab} V_{adiab}^\gamma &= cte & \text{livre cam med} &= \frac{1}{4\sqrt{2}\pi} \frac{N}{V} r^2 \\
 k_B &= 1,38 \times 10^{-23} J/K & N_A &= 6,02 \times 10^{23} mol^{-1} \\
 \epsilon_{med-trans} &= \frac{3}{2} k_B T & \epsilon_{med-total} &= \frac{5}{2} k_B T & \eta &= \frac{W_{saída}}{Q_Q} = 1 - \frac{Q_F}{Q_Q} \leq \eta_{Carnot} = 1 - \frac{T_F}{T_Q} & K &= \frac{Q_F}{W_{entra}} \\
 v_{corda} &= \sqrt{\frac{T}{m}} & v &= \lambda f & n &= \frac{c}{v} & c &= 3,0 \times 10^8 m/s & v_{som} &\approx 340 m/s \\
 D(x, t) &= A \operatorname{sen}((kx \pm \omega t) + \phi_0) = A \operatorname{sen}\left(2\pi\left(\frac{x}{\lambda} \pm \frac{t}{T}\right) + \phi_0\right) & \beta &= (10 \text{ dB}) \log_{10}\left(\frac{I}{I_0}\right) & I &\propto A^2 \\
 I_0 &= 1,0 \times 10^{-12} \frac{W}{m^2} & {}^{(1)} f &= \frac{v \pm v_{obs}}{v \mp v_{fon}} f_0 & {}^{(2)} f_{luz} &= \sqrt{\frac{c \pm v_{rel}}{c \mp v_{rel}}} f_0 & {}^{(1),(2)} f &\frac{\text{aumenta}}{\text{diminui}} \text{ se } \frac{\text{aproxima}}{\text{afasta}} \\
 d \operatorname{sen} \theta &= m \lambda (\text{constr.} - \text{fend. múltiplas}) & \frac{1}{s} + \frac{1}{s'} &= \frac{1}{f} = \left(\frac{n_2}{n_1} - 1\right) \left(\frac{1}{R_1} - \frac{1}{R_2}\right) \\
 a \operatorname{sen} \theta &= m \lambda (\text{destr.} - \text{fend. simples}) & n_1 \operatorname{sen} \theta_1 &= n_2 \operatorname{sen} \theta_2 & m &= \frac{h'}{h} = \frac{-s'}{s} \\
 \theta &= 1,22 \frac{\theta}{D} & \theta < 1^\circ &\rightarrow \operatorname{sen} \theta \approx \theta
 \end{aligned}$$

$$\begin{aligned}
 \Delta \phi &= \Delta r + \Delta \phi_0 = m \cdot 2\pi \quad (\text{construtiva}) \\
 \lambda &= \frac{2L}{m} & f_m &= m \frac{v}{2L} & m &= 1, 2, 3, 4, \dots \\
 \lambda &= \frac{4L}{m} & f_m &= m \frac{v}{4L} & m &= 1, 3, 5, 7, \dots
 \end{aligned}$$