Formulário:

$n_1 \text{ sen } \theta_1 = n_2 \text{ sen } \theta_2$

$m = \frac{h'}{h} = -\frac{q}{p}$

$\frac{1}{p} + \frac{1}{q} = \frac{2}{R} = \frac{1}{f}$

$\frac{n_1}{p} + \frac{n_2}{q} = \frac{n_2 - n_1}{R}$

$\frac{1}{f} = (n-1)\left(\frac{1}{R_A} - \frac{1}{R_B}\right)$

$\omega = \sqrt{\frac{g}{L}}$

$y(t) = A \cos(\omega t + \varphi)$ $\qquad \omega = \sqrt{\frac{K}{M}}$

$y(t) = A\, e^{-(b/2m)t} \cos(\omega t + \phi)$ $\qquad \omega = \sqrt{\omega_0^2 - \left(\frac{b}{2m}\right)^2}$

$F = F_0 \cos(\omega_f t)$ $\qquad Y(t) = A \cos(\omega_f t + \varphi)$ $\qquad A = \frac{F_0/m}{\sqrt{\left(\omega_f^2 - \omega_0^2\right)^2 + \left(\frac{b\,\omega_f}{m}\right)^2}}$

$y(t) = 2A \cos\left(\frac{\omega_1 - \omega_2}{2} t\right) \text{sen}\left(\frac{\omega_1 + \omega_2}{2} t\right)$

$y(x,t) = 2A \cos\frac{\varphi}{2}\ \text{sen}\left(kx - \omega t + \frac{\varphi}{2}\right)$

$Y(x,t) = A \,\text{sen}(kx \pm \omega t + \delta)$

$P = \frac{1}{2}\rho_{linear}\, \omega^2 A^2 V_{propagação}$ $\qquad V_{propagação} = \sqrt{\frac{F}{\rho_{linear}}}$

$y(x,t) = 2A \,\text{sen}(kx)\cos(\omega t)$ $\qquad y(x,t) = 2A \cos(kx)\cos(\omega t)$

$a \text{ sen } \theta = n\lambda$ $\qquad a \text{ sen } \theta = (2n+1)\ \frac{\lambda}{2}$

$f' = f\ \frac{1 \pm \frac{V_0}{V_s}}{1 \mp \frac{V_f}{V_s}}$

$E = m\,c^2$

$\lambda_n = \frac{h}{p_n}$

$E = h\,f - W$

$\lambda' - \lambda_0 = \frac{h}{mc}(1 - \cos\theta)$

$E_n = -\frac{mk^2 Z^2 e^4}{2\hbar^2}\ \frac{1}{n^2} = \frac{-13.6 \text{ eV}}{n^2}$

$N = N_0\, e^{-\lambda t}$ $\qquad T_{1/2} = \frac{\ln 2}{\lambda}$

$a = \left|\frac{dN}{dt}\right| = N_0\, \lambda\, e^{-\lambda t}$ $\qquad a = a_0\, e^{-\lambda t}$

Grandezas físicas, conversões e fórmulas:

$N_A = 6{,}022140857 \times 10^{23}$ moléculas/mol

$h = 6{,}626070040 \times 10^{-34}\ \mathrm{J \cdot s} = 4{,}135667662 \times 10^{-15}$ eV · s

$\hbar = h/2\pi = 1{,}054571800 \times 10^{-34}\ \mathrm{J \cdot s} = 6{,}582119514 \times 10^{-16}$ eV · s

$\varepsilon_0 = 8{,}854187817 \times 10^{-12}\ \mathrm{F/m}$ $\qquad$ $k = 1/4\pi\varepsilon_0 = 8{,}98755188 \times 10^{9}\ \mathrm{N \cdot m^2/C^2}$

$m_e = 9{,}10938356 \times 10^{-31}$ kg

$m_p = 1{,}67262 \times 10^{-27}$ kg = $1836.151\ m_e$ $\qquad$ 1 amu = $1{,}660539040 \times 10^{-27}$ kg

$m_n = 1{,}67493 \times 10^{-27}$ kg

$c = 299792{,}458\ \mathrm{km/s} = 2{,}99792458 \times 10^{8}$ m/s $\qquad$ $\frac{h}{mc} = 2.4263102367 \times 10^{-12}$ m

$e = 1{,}602176208 \times 10^{-19}$ C

1 Å = 10^{-10} m $\qquad$ $\pi = 3{,}14159265$

dioptria = inverso da distância focal medida em metros

Ci = $3{,}7 \times 10^{10}$ Bq

Transformações Trigonométricas

$$\operatorname{sen}(-x) = -\operatorname{sen}(x)$$
$$\cos(-x) = +\cos(x)$$
$$\operatorname{sen}\left(x \pm \frac{\pi}{2}\right) = \pm\cos(x)$$
$$\cos\left(x \pm \frac{\pi}{2}\right) = \mp\operatorname{sen}(x)$$

$\operatorname{sen}(x \pm y) = \sin x\ \cos y \pm \cos x\ \sin y$ $\qquad$ $\cos(x \pm y) = \cos x\ \cos y \mp \operatorname{sen} x\ \operatorname{sen} y$

$\operatorname{sen}^2 x = \frac{1}{2} - \frac{1}{2}\cos 2x$ $\qquad$ $\cos^2 x = \frac{1}{2} + \frac{1}{2}\cos 2x$

$$\operatorname{sen} x \pm \operatorname{sen} y = 2\cos\left(\frac{x \mp y}{2}\right)\operatorname{sen}\left(\frac{x \pm y}{2}\right)$$

$\cos x + \cos y = 2\cos\left(\frac{x+y}{2}\right)\cos\left(\frac{x-y}{2}\right)$ $\qquad$ $\cos x - \cos y = 2\operatorname{sen}\left(\frac{x+y}{2}\right)\operatorname{sen}\left(\frac{x-y}{2}\right)$