All Formulas (Final)

$T = 2\pi\sqrt{\frac{m}{k}}$; $\omega = 2\pi f$; $f = \frac{1}{T}$; $v = \lambda f$; $v = \sqrt{\frac{F}{\mu}}$; $v = \sqrt{\frac{\gamma kT}{m}}$; $v = \sqrt{\frac{B_{ad}}{\rho}}$; $v = \sqrt{\frac{Y}{\rho}}$;

$v = 331\sqrt{\frac{T}{273}}$; $\Delta s = |\ell_1 - \ell_2| = n\lambda \qquad n = 0,1,2,3\ldots$;

$\Delta s = |\ell_1 - \ell_2| = (n + \frac{1}{2})\lambda \qquad n = 0,1,2,3\ldots$; $y = A\sin\left(2\pi ft \mp \frac{2\pi x}{\lambda}\right)$; $I = \frac{P}{A}$;

$f_O = f_S\left(\frac{v \pm v_O}{v \mp v_S}\right)$ for the numerator $\begin{cases} + \text{ toward} \\ - \text{ away} \end{cases}$ & for the denominator; $\begin{cases} - \text{ toward} \\ + \text{ away} \end{cases}$;

$f_{beat} = |f_1 - f_2|$; $f_n = n\left(\frac{v}{2L}\right) \qquad n = 1,2,3,\ldots$; $f_n = n\left(\frac{v}{2L}\right) \qquad n = 1,2,3,\ldots$;

$f_n = n\left(\frac{v}{4L}\right) \qquad n = 1,3,5,\ldots$; $N = \frac{q}{e}$; $F = \frac{kq_1q_2}{r^2}$; $F = q_0E$; $E = \frac{kq}{r^2}$; $\Phi_E = EA\cos\theta$;

$E = \frac{q}{\varepsilon_0 A} = \frac{\sigma}{\varepsilon_0}$; $EPE = q_0V = \frac{kq_0q}{r}$; $\Delta(EPE) = -W_{AB} = -qE_x\Delta x$; $V = \frac{kq}{r}$; $V = Ed$;

$q = CV$; $\frac{1}{2}mv_i^2 + EPE_i = \frac{1}{2}mv_f^2 + EPE_f$; $C = \frac{\kappa\varepsilon_0 A}{d}$; $C_{eq} = C_1 + C_2 + \cdots$;

$\frac{1}{C_{eq}} = \frac{1}{C_1} + \frac{1}{C_2} + \cdots$; $E = \frac{1}{2}CV^2$; $I = \frac{\Delta q}{\Delta t}$; $I = nqv_dA$; $V = IR$; $R = \rho\frac{L}{A}$; $\frac{R_1}{R_2} = \frac{I_2}{I_1}$;

$\rho = \rho_0[1 + \alpha(T - T_0)]$ and $R = R_0[1 + \alpha(T - T_0)]$; $P = IV$; $R_{eq} = R_1 + R_2 + \cdots$;

$\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2} + \cdots$; $V_T = Emf - Ir$ and $I = \frac{Emf}{R_{total} + r}$; $q = q_0[1 - \exp(-t/(RC))]$;

$q = q_0\exp(-t/(RC))$; $F = q_0vB\sin\theta$; $F = IB\ell\sin\theta$; $\tau = NIAB\sin\phi$; $B = \frac{\mu_0 I}{2\pi r}$;

$B = N\frac{\mu_0 I}{2R}$; $B = \mu_0 nI$; $\Phi = BA\cos\phi$; $V_{emf} = -N\frac{\Delta\Phi}{\Delta t}$; $V_{emf} = v\ell B$; $V_{emf} = v(2\ell)B$;

$V_{emf} = NAB\omega \sin \omega t$ where $\omega = 2\pi f$; $V_{emf} = -L\frac{\Delta I}{\Delta t}$; $L = \frac{N\Phi_B}{I}$; $L = \frac{\mu_0 N^2 A}{\ell}$;

$E = \frac{1}{2}LI^2$; $V_{rms} = \frac{V_0}{\sqrt{2}}$; $I_{rms} = \frac{I_0}{\sqrt{2}}$; $X_C = \frac{1}{2\pi fC}$; $X_L = 2\pi fL$; $Z = \sqrt{R^2 + (X_L - X_C)^2}$;

$\frac{V_s}{V_p} = \frac{N_s}{N_p}$, $\frac{I_s}{I_p} = \frac{N_p}{N_s}$; $E_{rms} = \frac{1}{\sqrt{2}}E_0$, & $B_{rms} = \frac{1}{\sqrt{2}}B_0$; $f = \frac{1}{2\pi\sqrt{LC}}$; $c = f\lambda$; $c = \frac{1}{\sqrt{\varepsilon_0 \mu_0}}$;

$E = cB$; $I = \frac{E_{\max} B_{\max}}{2\mu_0}$; $I = \frac{E_{\max}^2}{2\mu_0 c} = \frac{c}{2\mu_0}B_{\max}^2$; $E = hf$; $n = \frac{c}{v}$; $n_1 \sin\theta_1 = n_2 \sin\theta_2$;

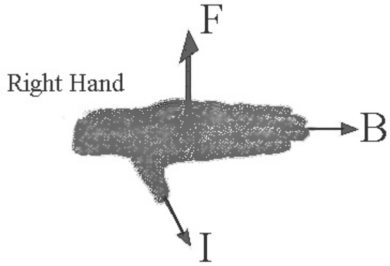
$\frac{n_2}{n_1} = \frac{d'}{d}$; $\sin\theta_c = \frac{n_2}{n_1}$ $(n_1 > n_2)$; $f = \frac{1}{2}R$; $f = -\frac{1}{2}R$; $\frac{1}{p} + \frac{1}{q} = \frac{1}{f}$; $M = \frac{\mathrm{h}'}{\mathrm{h}} = -\frac{q}{p}$;

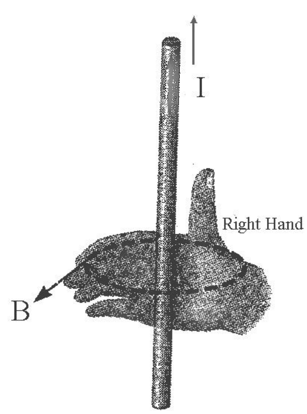
$\sin\theta = m\frac{\lambda}{d}$ $m = 0,1,2,3\ldots$; $\sin\theta = \left(m + \frac{1}{2}\right)\frac{\lambda}{d}$ $m = 0,1,2,3\ldots$; $\lambda_{film} = \frac{\lambda_{vacuum}}{n}$;

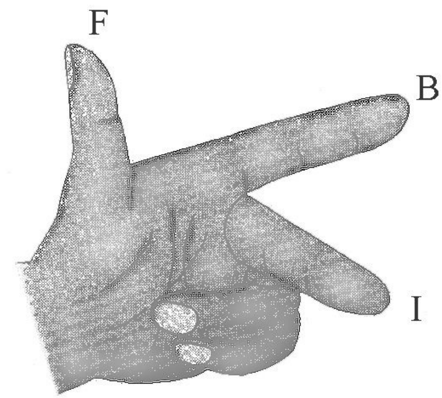
$2t = (m + \frac{1}{2})\lambda_{film}$ $(m = 0,1,2,\ldots)$; $2t = m\lambda_{film}$ $(m = 0,1,2\ldots)$;

$\sin\theta = m\frac{\lambda}{a}$ $m = \pm1,\pm2,\pm3\ldots$; $I = I_0 \cos^2\theta$; $\tan\theta_B = \frac{n_2}{n_1}$

Right- and Left-Hand Laws







Appendix

M (mega) $\times 10^6$
k (kilo) $\times 10^3$
m (milli) $\times 10^{-3}$
μ (micro) $\times 10^{-6}$