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PHY 2048 and 2049 formula sheet

\[ \Delta E = Q + W \]
\[ \vec{F} = \frac{kq_1 q_2}{r} \hat{r} \]
\[ \vec{F} = q \vec{E} \]
\[ E = \frac{\vec{F}}{q_{test}} = \frac{kq}{r^2} \hat{r} \]
\[ V(r) = \frac{kq}{r} \]
\[ \oint \vec{E} \cdot d\vec{A} = \frac{q_{\text{enclosed}}}{\varepsilon_0} \]
\[ \frac{1}{c} = \frac{1}{c_1} + \frac{1}{c_2} \]
\[ C = C_1 + C_2 \]
\[ V = I \vec{L} \times \vec{B} \]
\[ \oint \vec{B} \cdot d\vec{r} = \mu_0 I_{\text{enclosed}} \]
\[ B = \frac{\mu_0 N I}{2 \pi r} \]
\[ \varepsilon = -\frac{d\phi_B}{dt} = B I V \]
\[ \omega_0 = \frac{1}{\sqrt{LC}} \]
\[ Z = \sqrt{R^2 + (X_L - X_C)^2} \]
\[ X_C = \frac{1}{\omega C} \]
\[ X_L = \omega L \]
\[ n_1 \sin(\theta_1) = n_2 \sin(\theta_2) \]
\[ \frac{1}{x} + \frac{1}{y} = \frac{1}{r} \]
\[ C = \frac{q}{v} \]
\[ V = V_c e^{-\frac{t}{RC}} \]
\[ V_c = \varepsilon (1 - e^{-\frac{t}{RC}}) \]
\[ \phi = \vec{E} \cdot \hat{A} \]
\[ \oint \vec{E}dA \cos \theta \]

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