$$\mathbf{H} = \frac{1}{4\pi}\int_L \frac{I\,\mathbf{dl}' \times (\mathbf{r}-\mathbf{r}')}{|\mathbf{r}-\mathbf{r}'|^3} \quad \text{[A/m]}$$

$$\mathbf{H} = \frac{1}{4\pi}\int_S \frac{\mathbf{K} \times (\mathbf{r}-\mathbf{r}')\,dS'}{|\mathbf{r}-\mathbf{r}'|^3} \quad \text{[A/m]}$$

$$\mathbf{H} = \frac{1}{4\pi}\int_v \frac{\mathbf{J} \times (\mathbf{r}-\mathbf{r}')\,dv'}{|\mathbf{r}-\mathbf{r}'|^3} \quad \text{[A/m]}$$

$$\oint_L \mathbf{H}\cdot\mathbf{dl} = I_{enc}$$

$$\mathbf{B} = \mu\mathbf{H} \quad \text{[Wb/m}^2\text{]}$$

$$\mu = \mu_r\mu_0 \quad \text{[H/m]}$$

$$\mu_0 = 4\pi \times 10^{-7} \quad \text{[H/m]}$$

$$\psi = \int_S \mathbf{B}\cdot\mathbf{dS} \quad \text{[Wb]}$$

$$\oint_S \mathbf{B}\cdot\mathbf{dS} = 0$$

$$\nabla\cdot\mathbf{D} = \rho_v$$

$$\nabla\cdot\mathbf{B} = 0$$

$$\nabla \times \mathbf{E} = 0$$

$$\nabla \times \mathbf{H} = \mathbf{J}$$

$$\nabla \times \mathbf{A} = \mathbf{B} \quad \text{[Wb/m}^2\text{]}$$

$$\mathbf{A} = \frac{\mu}{4\pi}\int_L \frac{I\mathbf{dl}'}{|\mathbf{r}-\mathbf{r}'|} \quad \text{[Wb/m]}$$

$$\mathbf{A} = \frac{\mu}{4\pi}\int_S \frac{\mathbf{K}dS'}{|\mathbf{r}-\mathbf{r}'|} \quad \text{[Wb/m]}$$

$$\mathbf{A} = \frac{\mu}{4\pi}\int_v \frac{\mathbf{J}dv'}{|\mathbf{r}-\mathbf{r}'|} \quad \text{[Wb/m]}$$

$$\mathbf{F} = Q(\mathbf{E} + \mathbf{u} \times \mathbf{B}) \quad \text{[N]}$$

$$\mathbf{F} = m\mathbf{a} = m\frac{d\mathbf{u}}{dt} \quad \text{[N]}$$

$$\mathbf{F} = \int I\mathbf{dl} \times \mathbf{B} \quad \text{[N]}$$

$$\mathbf{F} = I\mathbf{L} \times \mathbf{B} \quad \text{[N]}$$

$$\mathbf{H} = \frac{m}{4\pi r^3}(2\cos\theta\,\hat{\mathbf{a}}_r + \sin\theta\,\hat{\mathbf{a}}_\theta) \quad \text{[A/m]}$$

$$\mathbf{H} = \frac{I}{2\pi\rho}\,\hat{\mathbf{a}}_\phi \quad \text{[A/m]}$$

$$\mathbf{T} = \mathbf{m} \times \mathbf{B} \quad \text{[N-m]}$$

$$\mathbf{m} = IS\,\hat{\mathbf{a}}_n \quad \text{[A-m}^2\text{]}$$

$$H_{1t} - H_{2t} = K,\; B_{1n} = B_{2n}$$

$$L = \lambda/I \quad \text{[H]}$$

$$\lambda = N\int \mathbf{B}\cdot\mathbf{dS} \quad \text{[Wb]}$$

$$L = \frac{\mu_0 l}{2\pi}\ln(b/a) \quad \text{[H]} \quad b > a$$

$$L = \frac{\mu_0 N^2 S}{l} \quad \text{[H]}$$

$$w_{_M} = \frac{1}{2}\,\mu|\mathbf{H}|^2 \quad \text{[J/m}^3\text{]}$$

$$W_{_M} = \frac{1}{2}\,\mu\int_v |\mathbf{H}|^2\,dv \quad \text{[J]}$$

$$\int \frac{dx}{[x^2+a^2]^{3/2}} = \frac{x}{a^2\sqrt{x^2+a^2}}$$

$$\int \frac{xdx}{\sqrt{x^2+a^2}} = \sqrt{x^2+a^2}$$