$$F$$

$$F = \frac{QQ'}{4\pi\varepsilon_0 r^3} r$$

$$(1)_{\varepsilon_0}$$

$$E(x)$$

$$F = Q'E$$
(2)
$$E = \frac{Qr}{4\pi\varepsilon_0 r^3}$$
(3)

(5)
$$E(x) = \int_{V} \frac{\rho(x') r}{4\pi\varepsilon_{0} r^{3}} dV'$$

$$\oint_{S} E \cdot dS = \frac{Q}{\varepsilon_{0}}$$
(5)

$$\oint_{S} E \cdot dS = \frac{Q}{4\pi\varepsilon_{0}} \oint d\Omega = \frac{Q}{\varepsilon_{0}}$$
(6)
$$d\Omega$$

$$\oint_{s} E \cdot dS = \frac{1}{\varepsilon_0} \int_{V} \rho dV$$
(7)

$$\nabla \cdot E = \frac{\rho}{\varepsilon_0}$$
(8)
$$\oint_L E \cdot dl = \frac{Q}{4\pi\varepsilon_0} \oint_L \frac{dr}{r^2} = -\frac{Q}{4\pi\varepsilon_0} \oint_L d\left(\frac{1}{r}\right)$$
(9)

$$\oint_L E \cdot \mathrm{d}l = 0$$

$$(10)^{J_L}$$

$$\nabla \times E = 0$$

$$(11)^{J_L}$$

$$\oint_S J \cdot dS = \int_V \nabla \cdot J dV = -\int_V \frac{\partial \rho}{\partial t} dV$$

$$(12)^{V} \cdot J + \frac{\partial \rho}{\partial t} = 0$$

$$(13)^{O} \frac{\partial \rho}{\partial t} = 0$$

$$\int_{S} J \, dS = \int_{V} V \, J \, dV = -\int_{V} \int_{V} \int_{V}$$

$$\begin{array}{c} \partial t \\ \partial \rho / \partial t = \end{array}$$

$$\nabla \cdot J = 0$$

$$(14) dF = Idl \times B$$

$$(15) dF = Idl \times B$$

$$dF = Idl \times B$$

$$B(x) = \frac{\mu_0}{4\pi} \int_V \frac{J(x') \times r}{r^3} dV'$$

$$B(x) = \frac{\mu_0}{4\pi} \oint_L \frac{I dl \times r}{r^3}$$

$$(17) \oint_{L} B \cdot dl = \mu_0 I$$

$$(18)$$

$$\oint_L B \cdot dl = \mu_0.$$

$$\nabla \times B = \mu_0 J$$

$$\oint_{s} B \cdot dS = 0$$

$$(20) \nabla \cdot B = 0$$

$$(21) \int_{s} B \cdot dS = 0$$

$$\nabla \cdot B = 0$$

$$\oint E \cdot dl = E = -\frac{d}{dt} \int B \cdot dS$$