**Maxwell's Equations in Integral form, in absence of magnetic and polarizable media**

$$\oint \vec{\mathbf{E}} \cdot d\vec{\mathbf{A}} = \frac{Q_{en}}{\epsilon_0} \qquad \text{(Gauss's law for electricity)}$$

$$\oint \vec{\mathbf{B}} \cdot d\vec{\mathbf{A}} = 0 \qquad \text{(Gauss's law for magnetism)}$$

$$\oint \vec{\mathbf{E}} \cdot d\vec{\mathbf{l}} = -\frac{d\Phi_B}{dt} \qquad \text{(Faraday's law of induction)}$$

$$\oint \vec{\mathbf{B}} \cdot d\vec{\mathbf{l}} = \mu_0 I + \mu_0 \epsilon_0 \frac{d\Phi_E}{dt} \qquad \text{(Ampere's law)}$$