Maxwell's Equations

Time-Varying Fields, simple media, & stationary circuits:

	Integral Form	Differential Form
Faraday's Law	$\oint_c \bar{\mathcal{E}} \cdot d\bar{l} = -\mu \frac{d}{dt} \int_s \bar{\mathcal{H}} \cdot d\bar{s}$	$\bar{\nabla} \times \bar{\mathcal{E}} = -\mu \frac{\partial \bar{\mathcal{H}}}{\partial t}$
Ampere's Law	$\oint_c \bar{\mathcal{H}} \cdot d\bar{l} = \sigma \int_s \bar{\mathcal{E}} \cdot d\bar{s} + \varepsilon \frac{d}{dt} \int_s \bar{\mathcal{E}} \cdot d\bar{s} + \int_s \bar{\mathcal{J}} \cdot d\bar{s}$	$\bar{\nabla} \times \bar{\mathcal{H}} = \sigma \bar{\mathcal{E}} + \varepsilon \frac{\partial \bar{\mathcal{E}}}{\partial t} + \bar{\mathcal{J}}$
Gauss' Law	$\oint_s \bar{\mathcal{E}} \cdot d\bar{s} = \frac{1}{\varepsilon} \int_V \rho_v \, dV$	$\bar{\nabla} \cdot \bar{\mathcal{E}} = \frac{\rho_v}{\varepsilon}$
	$\oint_s \bar{\mathcal{H}} \cdot d\bar{s} = 0$	$\bar{\nabla} \cdot \bar{\mathcal{H}} = 0$