Dermed: $\oint_c \vec{E}\cdot d\vec{l} = \int_S (\nabla\times\vec{E})\cdot d\vec{A}$

Faradays ‖ Henrys lov $\quad\quad \|$

$-\frac{d}{dt}\int_S \vec{B}\cdot d\vec{A} \overset{\text{fast}}{\underset{S}{=}} -\int_S \frac{\partial\vec{B}}{\partial t}\cdot d\vec{A}$

$\Rightarrow \boxed{\nabla\times\vec{E} = -\frac{\partial\vec{B}}{\partial t}}$

(Igjen: Vilkårlig c, S $\Rightarrow$ <u>integrandene</u> like overalt)

Videre: $\oint \vec{B}\cdot d\vec{l} = \int_S (\nabla\times\vec{B})\cdot d\vec{A}$

Ampere ‖ Maxwell $\quad\quad \|$

$\mu_0 I + \mu_0\varepsilon_0 \frac{d}{dt}\int_S \vec{E}\cdot d\vec{A} = \mu_0 \int_S \left(\vec{j} + \varepsilon_0\frac{\partial\vec{E}}{\partial t}\right)\cdot d\vec{A}$

$\Rightarrow \boxed{\nabla\times\vec{B} = \mu_0\vec{j} + \mu_0\varepsilon_0\frac{\partial\vec{E}}{\partial t}}$

Oppsummering:

$$\boxed{\begin{aligned}
\nabla\cdot\vec{E} &= \rho/\varepsilon_0\\
\nabla\times\vec{E} &= -\frac{\partial\vec{B}}{\partial t}\\
\nabla\cdot\vec{B} &= 0\\
\nabla\times\vec{B} &= \mu_0\vec{j} + \mu_0\varepsilon_0\frac{\partial\vec{E}}{\partial t}
\end{aligned}}$$

Maxwells ligninger på differensialform