Last time: Solving Boundary-Value Problems in Magnetostatics

method	no Ferromagnetics $\vec{B} = \mu \vec{H}$	Ferromagnetics ($\vec{M} \neq 0$ for $\vec{B}, \vec{H} = 0$)
$\vec{A}$	$\nabla^2 \vec{A} = -\mu \vec{J}$ $\Rightarrow \vec{A}(\vec{x}) = \frac{\mu}{4\pi}\int d^3x' \frac{\vec{J}(\vec{x}')}{\lvert\vec{x}-\vec{x}'\rvert}$	$\nabla^2 \vec{A} = -\mu_0 [\vec{J} + \vec{\nabla}\times\vec{M}]$ $\vec{A}(\vec{x}) = \frac{\mu_0}{4\pi}\int_V d^3x' \frac{\vec{J}(\vec{x}') + \vec{\nabla}'\times\vec{M}(\vec{x}')}{\lvert\vec{x}-\vec{x}'\rvert}$ $+ \frac{\mu_0}{4\pi}\int_S da' \frac{\vec{K}(\vec{x}') + \vec{M}(\vec{x}')\times\hat{n}'}{\lvert\vec{x}-\vec{x}'\rvert}$ surface term
Φ_M (only for $\vec{J} = 0$)	$\nabla^2 \Phi_M = 0$ Solve Laplace eq'n with b.c.'s.	$\nabla^2 \Phi_M = \vec{\nabla}\cdot\vec{M}$ $\Rightarrow \Phi_M(\vec{x}) = -\frac{1}{4\pi}\int_V d^3x' \frac{\vec{\nabla}'\cdot\vec{M}(\vec{x}')}{\lvert\vec{x}-\vec{x}'\rvert}$ $+ \frac{1}{4\pi}\int_S da' \frac{\hat{n}'\cdot\vec{M}(\vec{x}')}{\lvert\vec{x}-\vec{x}'\rvert}$