Week 5
Is the midterm Mon. Feb 22 in class Ok?

A) Yes
B) Better Wed. Feb 24
C) Better Fri Feb 26.
Consider a cubic meter box of uniform magnetic field of 1 Tesla and a cubic meter box of uniform electric field of 1 Volt/meter. Which box contains the most energy?

A. The box of magnetic field
B. The box of electric field
C. They are both the same
D. Not enough information given
Take the divergence of both sides of Ampere’s law:

\[ \nabla \times \mathbf{B} = \mu_0 \mathbf{J} \]

According to Ampere’s law, the divergence of \( \mathbf{J} \) is

A. Always 0
B. A complicated partial differential of \( \mathbf{B} \)
C. \( -\partial \rho/\partial t \)
D. Need more information
5.16

Rank order $\left| \int \int \mathbf{J} \cdot d\mathbf{A} \right|$ (over blue surfaces) where $\mathbf{J}$ is uniform, going left to right:

A) iii > iv > ii > i
B) iii > i > ii > iv
C) i > ii > iii > iv
D) Something else!!
E) Not enough info given!!
In the following case, is the bound surface and volume charge zero or nonzero?

A. $\sigma_b = 0$, $\rho_b \neq 0$
B. $\sigma_b \neq 0$, $\rho_b \neq 0$
C. $\sigma_b = 0$, $\rho_b = 0$
D. $\sigma_b \neq 0$, $\rho_b = 0$
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B. $\sigma_b \neq 0$, $\rho_b \neq 0$
C. $\sigma_b = 0$, $\rho_b = 0$
D. $\sigma_b \neq 0$, $\rho_b = 0$