ECE341 HW #10

1. Problem 5.7 (i.e. Problem 5.7 in 5/E).
Hint: Add up the fields due to all four sides. "Magnetic flux density" means **B**.
Note: Answer in Appendix at end of book.

2. Problem 5.13 (i.e. Problem 5.13 in 5/E).
Hint: The field is a vector! You know the direction of the earth's magnetic field, right?
Note: Answer in Appendix at end of book.

3. Problem 5.16 (i.e. Problem 5.15 in 5/E).
Note: Answer in Appendix at end of book.

4. Problem 5.22 (i.e. Problem 5.21 in 5/E).
Note: Follow the same method as in example given in class. Just need a tad more math.
Answer: $\mathbf{H} = J_0 \hat{\boldsymbol{\varphi}}$ for $r < a$, and $\mathbf{H} = J_0(a/r) \hat{\boldsymbol{\varphi}}$ for $r > a$.

5. Problem 3.56 in 6/E (i.e. 3.48 in 5/E).
Note: This is a Chapter 3 problem. Answer in Appendix at end of book.

Do (b) thru (d). You answered whether the fields are solenoidal in HW #8. Now, only answer if the fields are conservative.

A field is said to be solenoidal if its divergence is zero.

A field is said to be conservative if its curl is zero.