

Most of the material in chapters 1 and 2 are a review of earlier concepts covered elsewhere. Read both chapters (pages 1-31 and 42-84) and get familiar with the notations Balanis uses. You may use an other book if you find following his explanations is difficult. The goal of this homework is to refresh your memory on calculus, Maxwell equations, time domain and phasor representations.

1. Show that $\nabla \cdot (\nabla \times \vec{A}) = 0$
 2. Problem 1.1,
 3. 1.3,
 4. 1.9,
 5. 1.12
 6. 1.15
 7. 1.21
 8. 1.34
 9. 1.35
10. If $\vec{a} = \text{Re}[\vec{E} e^{j\omega t}]$ and $\vec{b} = \text{Re}[\vec{B} e^{j\omega t}]$ show that:

$$\frac{1}{2} \text{Re}[\vec{A} \times \vec{B}] = \langle \vec{a} \times \vec{b} \rangle$$

where $\langle \rangle$ denotes the time average