Study Material

Text Book

Elements of Electromagnetics, 6th Ed.
Matthew N. O. Sadiku
Oxford University Press

Review Mathematics of Electromagnetics

Review Vector Algebra
Chapter 1, pp. 3-23

Review Coordinate Systems & Transformations
Chapter 2, pp. 29-50.

Review Vector Calculus
Chapter 3, pp. 56-96.

Study Maxwell's Equations

Read Maxwell's Equations
Chapter 9, pp. 406-445

Problems

Problem #1

Calculate the gradient of $f(x,y,z) = 2\sin x - xy^2 z + xe^y$ at point (2,3,5).

Problem #2

Solve the following differential equation and boundary conditions.

$$\frac{d^2 f}{dz^2} - \gamma^2 f = 0 \qquad f(0) = 1 \qquad f'(0) = 0$$

Problem #3

Given the electric field $\vec{E} = A\cos\left[\omega(t - z/c)\right]\hat{a}_y$, determine the time-dependent magnetic field intensity $\vec{H}$ in free space.