

Electrodynamics

Problem Set 1
Kharazmi University

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Conceptual Problems:

Problem 1.1. In electrostatics, why the electric field inside a conductor is zero?

Problem 1.2. Briefly, describe Helmholtz's theorem.

Problem 1.3. Briefly, describe Green's Function (in electrodynamics). Why it can be important for us?

Problem 1.4. Write down Stokes's theorem and the Divergence theorem. Also, explain them.

Mathematical Problems:

Problem 1.5. A point charge q is situated a distance a from the center of a grounded conducting sphere of radius R . Find the potential outside the sphere. Please, use the method of images.

*Hint: see page 128 (chapter 3) of the last edition of Griffiths.

Problem 1.6. voluntarily, solve one of the exercises in chapter 1 (Jackson).