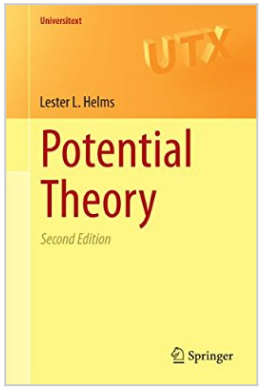

Potential Theory (Universitext)

By Lester L. Helms

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Potential Theory presents a clear path from calculus to classical potential theory and beyond, with the aim of moving the reader into the area of mathematical research as quickly as possible. The subject matter is developed from first principles using only calculus. Commencing with the inverse square law for gravitational and electromagnetic forces and the divergence theorem, the author develops methods for constructing solutions of Laplace's equation on a region with prescribed values on the boundary of the region.

The latter half of the book addresses more advanced material aimed at those with the background of a senior undergraduate or beginning graduate course in real analysis. Starting with solutions of the Dirichlet problem subject to mixed boundary conditions on the simplest of regions, methods of morphing such solutions onto solutions of Poisson's equation on more general regions are developed using diffeomorphisms and the Perron-Wiener-Brelot method, culminating in application to Brownian motion.

In this new edition, many exercises have been added to reconnect the subject matter to the physical sciences. This book will undoubtedly be useful to graduate students and researchers in mathematics, physics and engineering.

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Potential Theory (Universitext) By Lester L. Helms Bibliography

- Rank: #895499 in eBooks
- Published on: 2014-04-10
- Released on: 2014-04-10
- Format: Kindle eBook

Editorial Review

From the Back Cover

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About the Author
The author's interests lie in three interrelated topics: heat equations associated with second-order elliptic operators, Markov or diffusion processes and potential theory.

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