



# Real Analysis: Measure Theory, Integration, and Hilbert Spaces (Princeton Lectures in Analysis) (Bk. 3)

By Elias M. Stein, Rami Shakarchi

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After setting forth the basic facts of measure theory, Lebesgue integration, and differentiation on Euclidian spaces, the authors move to the elements of Hilbert space, via the L<sub>2</sub> theory. They next present basic illustrations of these concepts from Fourier analysis, partial differential equations, and complex analysis. The final part of the book introduces the reader to the fascinating subject of fractional-dimensional sets, including Hausdorff measure, self-replicating sets, space-filling curves, and Besicovitch sets. Each chapter has a series of exercises, from the relatively easy to the more complex, that are tied directly to the text. A substantial number of hints encourage the reader to take on even the more challenging exercises.

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### About the Author

Elias M. Stein is Professor of Mathematics at Princeton University. Rami Shakarchi received his Ph.D. in Mathematics from Princeton University in 2002.

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