

14 The Lebesgue Integral	301
14.1 Measures	301
14.2 Dynkin's Lemma	303
14.3 The Lebesgue Stieltjes Measures and Borel Sets	305
14.4 Regularity	307
14.5 Measurable Functions	310
14.6 Riemann Integrals for Decreasing Functions	313
14.7 Lebesgue Integrals of Nonnegative Functions	313
14.8 Nonnegative Simple Functions	314
14.9 The Monotone Convergence Theorem	316
14.10 The Integral's Righteous Algebraic Desires	317
14.11 Integrals of Real Valued Functions	317
14.12 The Vitali Covering Theorems	320
14.13 Differentiation of Increasing Functions	324
14.14 Exercises	326
15 Integration on Rough Paths*	333
15.1 Finite p Variation	334
15.2 Piecewise Linear Approximation	337
15.3 The Young Integral	340
A Construction of Real Numbers	347
B Classification of Real Numbers	353
B.1 Algebraic Numbers	353
B.2 The Symmetric Polynomial Theorem	355
B.3 Transcendental Numbers	359

Copyright © 2018, You are welcome to use this, including copying it for use in classes or referring to it on line but not to publish it for money. I do constantly upgrade it when I find things which could be improved.