Chapter 10
Final Remarks

Nelson [60, Appendix] has proved that in a rigorous sense the concepts of radically elementary probability theory are equivalent to the concepts of the classical theory of stochastic processes. For this reason, the radically elementary approach to stochastic calculus as presented in the present work has the same scientific content as the usual approach to the subject.

As we have seen, radically elementary probability theory allows for elementary proofs of many results in stochastic analysis, including Itô's formula, Girsanov's theorem, the Feynman–Kac formula, and even stochastic calculus for Lévy walks with finite-variation jump part. The only prerequisites to teach basic stochastic analysis in this framework are finite probability theory, basic real analysis, and the fact that the Peano axioms do not completely characterize the natural numbers. For this reason, the radically elementary approach to stochastic analysis seems ideally suited for introductory courses on stochastic calculus in the mathematics curricula of quantitative finance, engineering, and physics programmes.

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