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Function; 3.3 The Gaussian Random Variable; 3.4 Other Important Random Variables; 3.4.1 Uniform Random Variable; 3.4.2 Exponential Random Variable; 3.4.3 Laplace Random Variable; 3.4.4 Gamma Random Variable; 3.4.5 Erlang Random Variable; 3.4.6 Chi-Squared Random Variable; 3.4.7 Rayleigh Random Variable; 3.4.8 Rician Random Variable; 3.4.9 Cauchy Random Variable; 3.5 Conditional Distribution and Density Functions; 3.6 Engineering Application: Reliability and Failure Rates; Exercises; Section 3.1: The Cumulative Distribution Function; Section 3.2: The Probability Density Function; Section 3.3: The Gaussian Random Variable; Section 3.4: Other Important Random Variables; Section 3.5: Conditional Distribution and Density Functions; Section 3.6: Reliability and Failure Rates; Miscellaneous Exercises; MATLAB Exercises; Chapter 4: Operations on a Single Random Variable; 4.1 Expected Value of a Random Variable; 4.2 Expected Values of Functions of Random Variables; 4.3 Moments; 4.4 Central Moments; 4.5 Conditional Expected Values; 4.6 Transformations of Random Variables; 4.6.1 Monotonically Increasing Functions; 4.6.2 Monotonically Decreasing Functions; 4.6.3 Nonmonotonic Functions; 4.7. Characteristic Functions; 4.8. Probability-Generating Functions; 4.9 Moment-Generating Functions; 4.10 Evaluating Tail Probabilities; 4.11 Engineering Application-Scalar Quantization; 4.12 Engineering Application-Entropy and Source Coding; Exercises; Section 4.1: Expected Values of a Random Variable; Section 4.2: Expected Values of Functions of a Random Variable; Section 4.3: Moments; Section 4.4: Central Moments; Section 4.5: Conditional Expected Values; Section 4.6: Transformations of Random Variables; Section 4.7: Characteristic Functions; Section 4.8: Probability-Generating Functions; Section 4.9: Moment-Generating Functions; Section 4.10: Evaluating Tail Probabilities

Sommario/riassunto

Miller and Childers have focused on creating a clear presentation of foundational concepts with specific applications to signal processing and communications, clearly the two areas of most interest to students and instructors in this course. It is aimed at graduate students as well as practicing engineers, and includes unique chapters on narrowband random processes and simulation techniques. The appendices provide a refresher in such areas as linear algebra, set theory, random variables, and more. Probability and Random Processes also includes applications in digital communication.