Stat 6894 Midterm Questions

1. Product Space and Fubini’s Theorem, an application of Fubini’s Theorem: the Expectation Formula.
2. Variance, Covariance and Covariance Matrix
3. Characteristic Functions: Definition and Basic Properties
4. Characteristic Function of Normal Distribution
5. Bochner’s Theorem, Polya’s Theorem, and Characteristic Functions of Lattice Distributions
6. Inversion Formula
7. Uniqueness Theorem, Inversion Formula for Z-valued RVs, Inversion Formula for Integrable CFs
8. Finiteness of Moments of Distributions Implies Smoothness of CFs
9. Smoothness of CFs Implies Finiteness of Moments of Distributions
10. Characteristic Function of Random Vectors
11. Multivariate Normal Distribution
12. Different Types of Convergence, the Iff Condition for a.s. Convergence
13. Convergence Graph Theorem
14. Uniform Convergence to a Continuous cdf
15. Weak Convergence of Probability Measures, Quantile Function Lemma
16. Skorohod’s Theorem
17. Mapping Theorem, Uniform Integrability and Convergence in Distribution Proposition
18. Portmanteau Theorem
19. Slutsky’s Theorem