This homework set has five (5) problems. Some of them are routine, others require more thought. You are encouraged to work together and to ask questions of me; however, you must write up your solutions independently. On this and all subsequent homework sets please write neatly and use complete sentences. Writing mathematics well is a craft, aim to hone it!

1. *Folland* Exercise 3.11

2. In phase II of our proof of the Lebesgue-Radon-Nikodym theorem, we obtained measures $\lambda$ and $\rho$ by way of a “patchwork quilt” of measures guaranteed by phase I. Provide the details to the conclusion of phase II by showing that $\lambda$ and $\rho$ are both $\sigma$-finite, $\lambda \perp \mu$, $\rho << \mu$, and $\nu = \lambda + \rho$.

3. *Folland* Exercise 3.13

4. *Folland* Exercise 3.16

5. *Folland* Exercise 3.20