Assignment 5
Math 605, Fall '00

Read sections 4.7, 11.1–11.4 from Greene and Krantz.

Solve the following problems.

1. From the textbook. Pages 96-105: 33. Pages 147–158: 5ebf, 9.

2. Let $\mathcal{E}(\mathbf{R})$ denote the ring of C^∞ functions $f : \mathbf{R} \to \mathbf{R}$. Show by example that $\mathcal{E}(\mathbf{R})$ is not an integral domain. You might find it helpful to modify the example studied in the last problem of homework 4.

3. Prove Theorem 3.4.4 from Greene and Krantz.

4. Suppose that $f : D(0,2) \to \mathbf{C}$ is holomorphic and that $|f(1/n)| \leq 2^{-n}$ for each $n \in \mathbf{N}$. Show that $f \equiv 0$.

5. Suppose that $f : \mathbf{C} \to \mathbf{C}$ is entire and that $\operatorname{Im} f(z) > 0$ for every $z \in \mathbf{C}$. Show that f is constant.