

## Math 185 Homework 3.Due Wednesday 2/12

This homework set is taken from Stein and Shakarchi, Chapter I.4 and II.6 (exercises for all of chapter I and II). Exercise I.n denotes exercise n of chapter I.4, and similarly for II.n.

**1. I.13**

**2. Do ONE OF I.20, I.21** If you do both, indicate which one you want graded (I recommend trying to do both for fun.) *The notation  $a_n \sim b_n$  is “asymptotic equality”, i.e. the statement that the limit of the quotients  $\lim \frac{b_n}{a_n} = 1$ .*

**3. I.24, I.25** Don't worry about being rigorous for these, treat them as calculus problems about one-dimensional integrals. *For I.25:  $n$  can be negative! You are not allowed to use the antiderivative trick for this computation (though you can use it to check your answer).*

**4. II.1** (Hint: show that the  $R \rightarrow \infty$  limit of the path integral along the arc is zero by showing that even the after replacing the integrand by its absolute value the integral converges to zero. You are allowed to use without proof that  $|\int f(t)dt| < \int |f(t)|dt$  for complex-valued functions, and other standard 104-style results for complex-valued functions.)

**Quiz prep problems will be posted separately on Friday evening**