

## MATH 467, HOMEWORK #1, DUE MONDAY, JANUARY 28

ALEX IOSEVICH

Please print out the questions, type your name neatly on the questions page and staple it carefully to your homework solutions. Please do not write more than one solutions on a page unless you are typing in TeX.

**Problem #1:** Problem 1 on page 33.

**Problem #2:** Problem 2 on page 33.

**Problem #3:** Problem 6 on page 33.

**Problem #4:** Find the radius of convergence of the power series  $\sum_{n=0}^{\infty} \frac{n^2}{2^n} z^n$  and compute the value of the sum when  $z = 1$ .

**Problem #5:** Let  $a_0, a_1, \dots, a_n$  be a sequence of complex numbers. Let  $a_0 = a_1 = 1$  and assume that

$$\sum_{n=0}^{\infty} |a_{n+1} - a_n| < \infty.$$

Prove that the radius of convergence of  $\sum_{n=0}^{\infty} a_n z^n$  is  $\geq 1$ .