Math 427A: Complex Analysis, Fall Quarter 2018
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Homework 6
Due: Monday, November 26

Problem 6.1. Taylor 3.1.2

Problem 6.2. Taylor 3.1.7

Problem 6.3. Taylor 3.1.10

Problem 6.4. Taylor 3.1.16

Problem 6.5. Establish the following:

(1) For any integer n, $\lim_{k\to\infty}(k^n)^{1/k} = 1$.
(2) Suppose that $\{a_k\}$ and $\{b_k\}$ are sequences of non-negative real numbers with $a = \lim_{k\to\infty} a_k$ and $b = \limsup_{k\to\infty} b_k$. Show that $ab = \limsup_{k\to\infty}(a_k b_k)$.

Problem 6.6. Taylor 3.2.1

Problem 6.7. Taylor 3.2.2

Problem 6.8. Find the power series expansion of

$$f(z) = \frac{1}{(z+1)(z+2)}$$

about $z = 0$, and find its radius of convergence.