Homework 12 Due: Friday, November 17

1. [BC] 54.7

2. Suppose a function f(z) is represented in a neighborhood of 0 by the power series

$$f(z) = \sum_{n \ge 0} a_n z^n.$$

- (a) Write down the Maclaurin series for f'(z).
- (b) Prove that if f(z) = f'(z) then $a_{n+1} = \frac{1}{n+1}a_n$.
- (c) Let λ be a nonzero complex number. Suppose that $f'(z) = \lambda f(z)$. Give a formula for a_n in terms of a_0 .

3. [BC] 60.1.

4. [BC] 60.4. (HINT: Find a series representation for $\exp(z) - 1$, and then for $(\exp(z) - 1)/z$.)

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