HINTS FOR 2.1:

(10) This is not really different in the complex case, compared to the real case.

(14) Remember (or learn) the version of the Product Rule for a product of \( n \) differentiable functions:

\[
(f_1 f_2 \cdots f_n)' = f_1' f_2 \cdots f_n + f_1 f_2' f_3 \cdots f_n + \cdots + f_1 \cdots f_{n-1} f_n'.
\]

Here on the right side, in each term exactly one of the functions \( f_i \) is differentiated.

(21) Suppose \( \gamma(t), t \in [a, b], \) is a parametrization. Express the integral using this parametrization, in the usual way. You should recognize the integrand as something that appears when you apply a certain calculus rule.

HINTS FOR 2.2:

(14,16,18) The idea is to recognize the given series either as what you get when you plug something (say, \( z^2 \) or \( z^3 \) or...) into a known power series, or recognize it as what you get by differentiating some known power series, or recognize it as something similar to one of these.

(22)(a) Use the formula for the \( a_n \)'s in terms of derivatives of \( f \). What do the assumptions of the problem tell you about those derivatives?

(b) Use (a).

MIDTERM:

The first midterm is Friday February 19, during the lecture hour. It will cover through Section 2.2, excluding section 2.1.1 which we skipped.