

## Assignment #3

**Due:** Tuesday, October 25, 4:00 pm

You are being evaluated on the presentation, as well as the correctness, of your answers. Try to answer questions in a clear, direct, and efficient way. Sloppy or incorrect use of technical terms will lower your mark.

1. Give the complex form of  $e^{\sqrt{i}}$ .
2. Evaluate
  - (a)  $(1 - i)^{1+i}$
  - (b)  $\sinh(1 + \pi i)$
  - (c)  $i^{i^i}$
3. Find the points where  $\sin \bar{z}$  is differentiable and show that it is nowhere analytic.
4. Find the largest domain of analyticity for the following functions:
  - (a)  $f(z) = \text{Log}(z^2)$
  - (b)  $f(z) = \text{Log}(\text{Log}(z))$
5. Find all values of  $z$  for which  $\cosh z = \frac{1}{2}$ .