

**MATH 185-04: Complex Analysis**

Homework #3

*Due February 14, 2014*

1. Exercise I.8.7
2. Define the hyperbolic cosine and sine functions by

$$\cosh z = \frac{e^z + e^{-z}}{2}$$
$$\sinh z = \frac{e^z - e^{-z}}{2}.$$

Find the derivatives of  $\cosh z$  and  $\sinh z$ .

3. Exercise II.3.3
4. Exercise II.4.2
5. Exercise II.3.8 (Use the substitutions  $x = r \cos \theta$  and  $y = r \sin \theta$  and the multivariable chain rule)
6. Exercise II.5.1(a)(c)
7. Exercise II.5.4