

**Homework 3**

- 1 Apply the theorem from Section 23 of the book to verify that the function

$$f(z) = \cosh x \cos y + i \sinh x \sin y$$

is entire.

- 2 Let  $f$  be an entire function for which  $f(z) = z$  whenever  $\text{Arg}(z) = \pi/3$ . Determine, with justification, the function  $f$ . (There are theorems in Section 28 that are helpful here.)

- 3 For which complex numbers  $z$  is it true that  $|e^{-3z}| < 8$ ?