MATH 185-1: Complex Analysis

Homework #6

Due March 10, 2016

All problems are from Gamelin, *Complex Analysis*, unless stated otherwise. If you use an exercise that has not been shown on a previous assignment or in class, prove it first before applying it.

1. Exercise IV.3.1 (You may assume that $\int_{-\infty}^{\infty} e^{-x^2/2} dx = \sqrt{2\pi}$. This is known as the Gaussian integral, which is related to the Gaussian or normal distribution in statistics. You will be asked to prove this in a future assignment.)

2. Exercise IV.3.4

3. Exercise IV.4.1

4. Exercise IV.4.2

5. Exercise IV.5.1

6. Exercise IV.5.2 (Note that this exercise can be restated as the the following fact: Let f be an entire function. Then either the closure of the image of f is $\mathbb{C}$, or f is constant.)