Chapter 1

Complex Numbers

Chapter Overview

1. Exponential form of a complex number

2. Multiplying and dividing complex numbers

3. De Moivre’s Theorem

4. De Moivre’s for Trigonometric Identities

1. Expressing / in terms of powers of
2. Finding expressions for and

5. Roots

6. Sums of series



Recap: Mod/ arg form



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|  |  |  | **Mod-arg form** |
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Exponential Form

We’ve seen the Cartesian form a complex number and the modulus-argument form . But wait, there’s a third form!

In the later chapter on Taylor expansions, you’ll see that you that you can write functions as an infinitely long polynomial:

It looks like the and somehow add to give . The one problem is that the signs don’t quite match up.

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|  | **Mod-arg form** | **Exp Form** |
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|  |  |  |
|  |  |  |

**Exponential form**

Example

Use to show that



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