

Complex Arithmetic and Exponentials: Introduction

Complex numbers will be a fundamental part of the toolkit for this course. Using the complex roots of polynomials and allowing exponentials with complex exponents will simplify and unify our study of constant coefficient linear ODE's. The key will be Euler's formula

$$e^{it} = \cos(t) + i \sin(t).$$

This formula will allow us to replace trigonometric functions which have hard-to-remember, hard-to-manipulate identities by complex exponentials which have easy to remember and manipulate rules.

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