See this page in the course material.

Key Concepts

- The square root of any negative number can be written as a multiple of [latex]i[/latex].
- To plot a complex number, we use two number lines, crossed to form the complex plane. The horizontal axis is the real axis, and the vertical axis is the imaginary axis.
- Complex numbers can be added and subtracted by combining the real parts and combining the imaginary parts.
- Complex numbers can be multiplied and divided.
- To multiply complex numbers, distribute just as with polynomials.
- To divide complex numbers, multiply both the numerator and denominator by the complex conjugate of the denominator to eliminate the complex number from the denominator.
- The powers of [latex]i[/latex] are cyclic, repeating every fourth one.

Glossary

complex conjugate the complex number in which the sign of the imaginary part is changed and the real part of the number is left unchanged; when added to or multiplied by the original complex number, the result is a real number **complex number** the sum of a real number and an imaginary number, written in the standard form [latex]a+bi[/latex], where [latex]a[/latex] is the real part, and [latex]bi[/latex] is the imaginary part **complex plane** a coordinate system in which the horizontal axis is used to represent the real part of a complex number and the vertical axis is used to represent the imaginary part of a complex number **imaginary number** a number in the form [latex]bi[/latex] where [latex]i=\sqrt{-1}\\[/latex]

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