

Multiplying complex numbers

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In this unit we are going to look at how we can multiply complex numbers.

To multiply complex numbers, all you need to be able to do is multiply out brackets, collect like terms, and remember that the imaginary quantity i has the property that $i^2 = -1$.

Example

Suppose we want to find the result of multiplying together $(4 + 7i)$ and $(2 + 3i)$.

$$\begin{aligned}(4 + 7i)(2 + 3i) &= 8 + 12i + 14i + 21i^2 \\ &= 8 + 26i - 21 \quad (\text{because } i^2 = -1) \\ &= -13 + 26i\end{aligned}$$

Example

Suppose we want to find the result of multiplying together $(-2 + 5i)$ and $(1 - 3i)$.

$$\begin{aligned}(-2 + 5i)(1 - 3i) &= -2 + 6i + 5i - 15i^2 \\ &= -2 + 11i + 15 \quad (\text{because } i^2 = -1) \\ &= 13 + 11i\end{aligned}$$

In the next unit we will look at a quantity known as the complex conjugate of a complex number. The complex conjugate is needed when we want to divide complex numbers.