COMPLEX NUMBERS: CONJUGATE PROPERTIES

If \(z = a + bi \), then the complex conjugate is denoted as \(\overline{z} = a - bi \).

Property Name	Mathematical Expression
Self-Conjugate (Real)	z = \(\overline{z}\) if and only if z is real
Double Conjugate	\(\overline{(\overline{z})}\) = z
Sum / Difference	\(\overline{z_1 \pm z_2} = \overline{z_1} \pm \overline{z_2}\)
Product	\(\overline{z_1 \cdot z_2} = \overline{z_1} \cdot \overline{z_2}\)
Quotient	\(\overline{(z_1 / z_2)} = \overline{z_1} / \overline{z_2}\)
Power	\(\overline{(z^n)} = (\overline{z})^n\)
Modulus Squared	z \(\cdot\) \(\overline{z}\) = |z|Â² = aÂ² + bÂ²
Real Part	Re(z) = (z + \(\overline{z}\)) / 2

Property Name	Mathematical Expression
Imaginary Part	$\mathrm{Im}(z) = (z - \overline{z}) / 2i$