Modulus

The *modulus* of an object is its size.

For real numbers it is the same as the absolute value.

For complex numbers, the modulus of $z = x + iy$ is given by $|z| = \sqrt{x^2 + y^2}$, which is the distance of z from the origin in the complex plane. It is sometimes convenient to calculate $|z|$ using the complex conjugate $z^* = x - iy$ since $|z|^2 = zz^*$. If z is given in the polar form $re^{i\theta}$, where $r \geq 0$, then $|z| = r$.

For vectors, the modulus of a vector $\mathbf{v}$ is its magnitude (length), written $|\mathbf{v}|$. It is calculated using Pythagoras' Theorem. For example, the modulus of $\begin{pmatrix} 1 \\ 2 \end{pmatrix}$ is $\sqrt{1^2 + 2^2} = \sqrt{5}$.