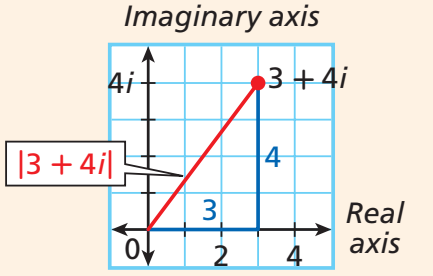
5-9 Operations with Complex Numbers

Absolute Value of a Complex Number

WORDS	ALGEBRA	EXAMPLE
The **absolute value of a complex number** $a + bi$ is the distance from the origin to the point (a, b) in the complex plane, and is denoted $\lvert a + bi \rvert$.	$\lvert a+bi \rvert = \sqrt{a^2 + b^2}$	 $\lvert 3+4i \rvert = \sqrt{3^2 + 4^2}$ $= \sqrt{9 + 16}$ $= 5$

Powers of i		
$i^1 = i$	$i^5 = i^4 \cdot i = 1 \cdot i = i$	$i^9 = i$
$i^2 = -1$	$i^6 = i^4 \cdot i^2 = 1 \cdot (-1) = -1$	$i^{10} = -1$
$i^3 = i^2 \cdot i = -1 \cdot i = -i$	$i^7 = i^4 \cdot i^3 = 1 \cdot (-i) = -i$	$i^{11} = -i$
$i^4 = i^2 \cdot i^2 = -1 \cdot (-1) = 1$	$i^8 = i^4 \cdot i^4 = 1 \cdot 1 = 1$	$i^{12} = 1$