**1.3 Complex Numbers**

**The Imaginary Unit *i***



(Note that −*i* is also a square root of −1.)

**Complex Number**

If *a* and *b* are real numbers, then any number of the form

***a* + *bi***

is a **complex number.** In the complex number *a* + *bi*, *a* is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and *b* is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**CLASSROOM EXAMPLE 1 Writing **

Write each number as the product of a real number and *i*.

**(a)  (b)  (c) **

**Operations on Complex Numbers**

**CLASSROOM EXAMPLE 2 Finding Products and Quotients Involving **

Find each product or quotient. Simplify the answers.

**(a)  (b) **

**(c)  (d) **

**CLASSROOM EXAMPLE 3 Simplifying a Quotient Involving **

Write  in standard form *a* + *bi*.

**CLASSROOM EXAMPLE 4 Adding and Subtracting Complex Numbers**

Find each sum or difference. Write answers in standard form.

**(a)  (b) **

**CLASSROOM EXAMPLE 5 Multiplying Complex Numbers**

Find each product. Write answers in standard form.

(a)  (b)  (c) 

**CLASSROOM EXAMPLE 6 Dividing Complex Numbers**

Find each quotient. Write answers in standard form 

(a)  (b) 