General Algebra II Lesson #4 Unit 7 Class Worksheet #4 For Worksheet #6

The 'Square Root Property' is used to solve equations of the form $N^2 = k$.

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The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

1.
$$x^2 = 9$$

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

$$1. \quad x^2 = 9$$
$$x = \sqrt{9}$$

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

1.
$$x^2 = 9$$

 $x = \sqrt{9}$ or $x = -\sqrt{9}$

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

1.
$$x^2 = 9$$

 $x = \sqrt{9}$ or $x = -\sqrt{9}$
 $x = 3$

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

1.
$$x^2 = 9$$

 $x = \sqrt{9}$ or $x = -\sqrt{9}$
 $x = 3$ or $x = -3$

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

1.
$$x^2 = 9$$

 $x = \sqrt{9}$ or $x = -\sqrt{9}$
 $x = 3$ or $x = -3$

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

Consider these examples.

1.
$$x^2 = 9$$

 $x = \sqrt{9}$ or $x = -\sqrt{9}$
 $x = 3$ or $x = -3$

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

Consider these examples.

1.
$$x^2 = 9$$

 $x = \sqrt{9}$ or $x = -\sqrt{9}$
 $x = 3$ or $x = -3$
2. $x^2 = -9$
 $x = 3$ or $x = -3$

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

Consider these examples.

1.
$$x^2 = 9$$

 $x = \sqrt{9}$ or $x = -\sqrt{9}$
 $x = 3$ or $x = -3$
2. $x^2 = -9$
 $x = \sqrt{-9}$

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

Consider these examples.

1.
$$x^2 = 9$$

 $x = \sqrt{9}$ or $x = -\sqrt{9}$
 $x = 3$ or $x = -3$
2. $x^2 = -9$
 $x = \sqrt{-9}$ or $x = -\sqrt{-9}$

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

Consider these examples.

1.
$$x^2 = 9$$

 $x = \sqrt{9}$ or $x = -\sqrt{9}$
 $x = 3$ or $x = -3$
2. $x^2 = -9$
 $x = \sqrt{-9}$ or $x = -\sqrt{-9}$
 $x = 3i$

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

Consider these examples.

1.
$$x^2 = 9$$
2. $x^2 = -9$ $x = \sqrt{9}$ or $x = -\sqrt{9}$ $x = \sqrt{-9}$ or $x = -\sqrt{-9}$ $x = 3$ or $x = -3$ $x = 3i$ or $x = -3i$

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

Consider these examples.

1.
$$x^2 = 9$$

 $x = \sqrt{9}$ or $x = -\sqrt{9}$
 $x = 3$ or $x = -3$

These solutions are real numbers.

2.
$$x^2 = -9$$

x = $\sqrt{-9}$ or x = $-\sqrt{-9}$
x = 3i or x = -3i

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

Consider these examples.

1.
$$x^2 = 9$$

 $x = \sqrt{9}$ or $x = -\sqrt{9}$
 $x = 3$ or $x = -3$

These solutions are real numbers.

3.
$$(x-2)^2 = 9$$

2.
$$x^2 = -9$$

 $x = \sqrt{-9}$ or $x = -\sqrt{-9}$
 $x = 3i$ or $x = -3i$

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

Consider these examples.

1.
$$x^2 = 9$$

 $x = \sqrt{9}$ or $x = -\sqrt{9}$
 $x = 3$ or $x = -3$

These solutions are real numbers.

3.
$$(x-2)^2 = 9$$

 $x-2 = \sqrt{9}$

2.
$$x^2 = -9$$

x = $\sqrt{-9}$ or x = $-\sqrt{-9}$
x = 3i or x = -3i

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

Consider these examples.

1.
$$x^2 = 9$$

 $x = \sqrt{9}$ or $x = -\sqrt{9}$
 $x = 3$ or $x = -3$

These solutions are real numbers.

2.
$$x = -9$$

 $x = \sqrt{-9}$ or $x = -\sqrt{-9}$
 $x = 3i$ or $x = -3i$

 $y^2 - 0$

3.
$$(x-2)^2 = 9$$

 $x-2 = \sqrt{9}$ or $x-2 = -\sqrt{9}$

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

Consider these examples.

1.
$$x^2 = 9$$

 $x = \sqrt{9}$ or $x = -\sqrt{9}$
 $x = 3$ or $x = -3$

These solutions are real numbers.

2.
$$x^2 = -9$$

 $x = \sqrt{-9}$ or $x = -\sqrt{-9}$
 $x = 3i$ or $x = -3i$

3.
$$(x-2)^2 = 9$$

x - 2 = $\sqrt{9}$ or x - 2 = $-\sqrt{9}$
x - 2 = 3

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

Consider these examples.

1.
$$x^2 = 9$$

 $x = \sqrt{9}$ or $x = -\sqrt{9}$
 $x = 3$ or $x = -3$

These solutions are real numbers.

2.
$$x^2 = -9$$

 $x = \sqrt{-9}$ or $x = -\sqrt{-9}$
 $x = 3i$ or $x = -3i$

3.
$$(x-2)^2 = 9$$

x - 2 = $\sqrt{9}$ or x - 2 = $-\sqrt{9}$
x - 2 = 3 or x - 2 = -3

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

Consider these examples.

1.
$$x^2 = 9$$

 $x = \sqrt{9}$ or $x = -\sqrt{9}$
 $x = 3$ or $x = -3$

These solutions are real numbers.

2.
$$x^2 = -9$$

 $x = \sqrt{-9}$ or $x = -\sqrt{-9}$
 $x = 3i$ or $x = -3i$

3.
$$(x-2)^2 = 9$$

 $x-2 = \sqrt{9}$ or $x-2 = -\sqrt{9}$
 $x-2 = 3$ or $x-2 = -3$
 $x = 5$

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

Consider these examples.

1.
$$x^2 = 9$$

 $x = \sqrt{9}$ or $x = -\sqrt{9}$
 $x = 3$ or $x = -3$

These solutions are real numbers.

2.
$$x^2 = -9$$

 $x = \sqrt{-9}$ or $x = -\sqrt{-9}$
 $x = 3i$ or $x = -3i$

3.
$$(x-2)^2 = 9$$

 $x-2 = \sqrt{9}$ or $x-2 = -\sqrt{9}$
 $x-2 = 3$ or $x-2 = -3$
 $x = 5$ or $x = -1$

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

Consider these examples.

1.
$$x^2 = 9$$

 $x = \sqrt{9}$ or $x = -\sqrt{9}$
 $x = 3$ or $x = -3$

These solutions are real numbers.

2.
$$x^2 = -9$$

 $x = \sqrt{-9}$ or $x = -\sqrt{-9}$
 $x = 3i$ or $x = -3i$

These solutions are imaginary numbers.

3.
$$(x-2)^2 = 9$$

 $x-2 = \sqrt{9}$ or $x-2 = -\sqrt{9}$
 $x-2 = 3$ or $x-2 = -3$
 $x = 5$ or $x = -1$

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

Consider these examples.

1.
$$x^2 = 9$$

 $x = \sqrt{9}$ or $x = -\sqrt{9}$
 $x = 3$ or $x = -3$

These solutions are real numbers.

3.
$$(x-2)^2 = 9$$

 $x-2 = \sqrt{9}$ or $x-2 = -\sqrt{9}$
 $x-2 = 3$ or $x-2 = -3$
 $x = 5$ or $x = -1$

These solutions are real numbers.

2.
$$x^2 = -9$$

x = $\sqrt{-9}$ or x = $-\sqrt{-9}$
x = 3i or x = -3i

4.
$$(x-2)^2 = -9$$

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

Consider these examples.

1.
$$x^2 = 9$$

 $x = \sqrt{9}$ or $x = -\sqrt{9}$
 $x = 3$ or $x = -3$

These solutions are real numbers.

3.
$$(x-2)^2 = 9$$

 $x-2 = \sqrt{9}$ or $x-2 = -\sqrt{9}$
 $x-2 = 3$ or $x-2 = -3$
 $x = 5$ or $x = -1$

These solutions are real numbers.

2.
$$x^2 = -9$$

x = $\sqrt{-9}$ or x = $-\sqrt{-9}$
x = 3i or x = -3i

4.
$$(x-2)^2 = -9$$

 $x-2 = \sqrt{-9}$

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

Consider these examples.

1.
$$x^2 = 9$$

 $x = \sqrt{9}$ or $x = -\sqrt{9}$
 $x = 3$ or $x = -3$

These solutions are real numbers.

3.
$$(x-2)^2 = 9$$

 $x-2 = \sqrt{9}$ or $x-2 = -\sqrt{9}$
 $x-2 = 3$ or $x-2 = -3$
 $x = 5$ or $x = -1$

These solutions are real numbers.

2.
$$x^2 = -9$$

x = $\sqrt{-9}$ or x = $-\sqrt{-9}$
x = 3i or x = -3i

4.
$$(x-2)^2 = -9$$

x - 2 = $\sqrt{-9}$ or x - 2 = $-\sqrt{-9}$

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

Consider these examples.

1.
$$x^2 = 9$$

 $x = \sqrt{9}$ or $x = -\sqrt{9}$
 $x = 3$ or $x = -3$

These solutions are real numbers.

3.
$$(x-2)^2 = 9$$

 $x-2 = \sqrt{9}$ or $x-2 = -\sqrt{9}$
 $x-2 = 3$ or $x-2 = -3$
 $x = 5$ or $x = -1$

These solutions are real numbers.

2.
$$x^2 = -9$$

x = $\sqrt{-9}$ or x = $-\sqrt{-9}$
x = 3i or x = -3i

4.
$$(x-2)^2 = -9$$

 $x-2 = \sqrt{-9}$ or $x-2 = -\sqrt{-9}$
 $x-2 = 3i$

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

Consider these examples.

1.
$$x^2 = 9$$

 $x = \sqrt{9}$ or $x = -\sqrt{9}$
 $x = 3$ or $x = -3$

These solutions are real numbers.

3.
$$(x-2)^2 = 9$$

 $x-2 = \sqrt{9}$ or $x-2 = -\sqrt{9}$
 $x-2 = 3$ or $x-2 = -3$
 $x = 5$ or $x = -1$

These solutions are real numbers.

2.
$$x^2 = -9$$

x = $\sqrt{-9}$ or x = $-\sqrt{-9}$
x = 3i or x = -3i

4.
$$(x-2)^2 = -9$$

 $x-2 = \sqrt{-9}$ or $x-2 = -\sqrt{-9}$
 $x-2 = 3i$ or $x-2 = -3i$

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

Consider these examples.

1.
$$x^2 = 9$$

 $x = \sqrt{9}$ or $x = -\sqrt{9}$
 $x = 3$ or $x = -3$

These solutions are real numbers.

3.
$$(x-2)^2 = 9$$

 $x-2 = \sqrt{9}$ or $x-2 = -\sqrt{9}$
 $x-2 = 3$ or $x-2 = -3$
 $x = 5$ or $x = -1$

These solutions are real numbers.

2.
$$x^2 = -9$$

x = $\sqrt{-9}$ or x = $-\sqrt{-9}$
x = 3i or x = -3i

4.
$$(x-2)^2 = -9$$

 $x-2 = \sqrt{-9}$ or $x-2 = -\sqrt{-9}$
 $x-2 = 3i$ or $x-2 = -3i$
 $x = 2 + 3i$

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

Consider these examples.

1.
$$x^2 = 9$$

 $x = \sqrt{9}$ or $x = -\sqrt{9}$
 $x = 3$ or $x = -3$

These solutions are real numbers.

3.
$$(x-2)^2 = 9$$

 $x-2 = \sqrt{9}$ or $x-2 = -\sqrt{9}$
 $x-2 = 3$ or $x-2 = -3$
 $x = 5$ or $x = -1$

These solutions are real numbers.

2.
$$x^2 = -9$$

x = $\sqrt{-9}$ or x = $-\sqrt{-9}$
x = 3i or x = -3i

4.
$$(x-2)^2 = -9$$

 $x-2 = \sqrt{-9}$ or $x-2 = -\sqrt{-9}$
 $x-2 = 3i$ or $x-2 = -3i$
 $x = 2 + 3i$ or $x = 2 + -3i$

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

Consider these examples.

1.
$$x^2 = 9$$

 $x = \sqrt{9}$ or $x = -\sqrt{9}$
 $x = 3$ or $x = -3$

These solutions are real numbers.

3.
$$(x-2)^2 = 9$$

 $x-2 = \sqrt{9}$ or $x-2 = -\sqrt{9}$
 $x-2 = 3$ or $x-2 = -3$
 $x = 5$ or $x = -1$

These solutions are real numbers.

2.
$$x^2 = -9$$

x = $\sqrt{-9}$ or x = $-\sqrt{-9}$
x = 3i or x = -3i

These solutions are imaginary numbers.

4.
$$(x-2)^2 = -9$$

 $x-2 = \sqrt{-9}$ or $x-2 = -\sqrt{-9}$
 $x-2 = 3i$ or $x-2 = -3i$
 $x = 2 + 3i$ or $x = 2 + -3i$

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

Consider these examples.

1.
$$x^2 = 9$$

 $x = \sqrt{9}$ or $x = -\sqrt{9}$
 $x = 3$ or $x = -3$

These solutions are real numbers.

3.
$$(x-2)^2 = 9$$

 $x-2 = \sqrt{9}$ or $x-2 = -\sqrt{9}$
 $x-2 = 3$ or $x-2 = -3$
 $x = 5$ or $x = -1$

These solutions are real numbers.

2.
$$x^2 = -9$$

x = $\sqrt{-9}$ or x = $-\sqrt{-9}$
x = 3i or x = -3i

These solutions are imaginary numbers.

4.
$$(x-2)^2 = -9$$

 $x-2 = \sqrt{-9}$ or $x-2 = -\sqrt{-9}$
 $x-2 = 3i$ or $x-2 = -3i$
 $x = 2 + 3i$ or $x = 2 + -3i$

These solutions are the sum of a real number

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

Consider these examples.

1.
$$x^2 = 9$$

 $x = \sqrt{9}$ or $x = -\sqrt{9}$
 $x = 3$ or $x = -3$

These solutions are real numbers.

3.
$$(x-2)^2 = 9$$

 $x-2 = \sqrt{9}$ or $x-2 = -\sqrt{9}$
 $x-2 = 3$ or $x-2 = -3$
 $x = 5$ or $x = -1$

These solutions are real numbers.

2.
$$x^2 = -9$$

x = $\sqrt{-9}$ or x = $-\sqrt{-9}$
x = 3i or x = -3i

These solutions are imaginary numbers.

4.
$$(x-2)^2 = -9$$

 $x-2 = \sqrt{-9}$ or $x-2 = -\sqrt{-9}$
 $x-2 = 3i$ or $x-2 = -3i$
 $x = 2 + 3i$ or $x = 2 + -3i$

These solutions are the sum of a real number

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

Consider these examples.

1.
$$x^2 = 9$$

 $x = \sqrt{9}$ or $x = -\sqrt{9}$
 $x = 3$ or $x = -3$

These solutions are real numbers.

3.
$$(x-2)^2 = 9$$

 $x-2 = \sqrt{9}$ or $x-2 = -\sqrt{9}$
 $x-2 = 3$ or $x-2 = -3$
 $x = 5$ or $x = -1$

These solutions are real numbers.

2.
$$x^2 = -9$$

 $x = \sqrt{-9}$ or $x = -\sqrt{-9}$
 $x = 3i$ or $x = -3i$

These solutions are imaginary numbers.

4.
$$(x-2)^2 = -9$$

 $x-2 = \sqrt{-9}$ or $x-2 = -\sqrt{-9}$
 $x-2 = 3i$ or $x-2 = -3i$
 $x = 2 + 3i$ or $x = 2 + -3i$

These solutions are the sum of a real number and an imaginary number.

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

Consider these examples.

1.
$$x^2 = 9$$

 $x = \sqrt{9}$ or $x = -\sqrt{9}$
 $x = 3$ or $x = -3$

These solutions are real numbers.

3.
$$(x-2)^2 = 9$$

 $x-2 = \sqrt{9}$ or $x-2 = -\sqrt{9}$
 $x-2 = 3$ or $x-2 = -3$
 $x = 5$ or $x = -1$

These solutions are real numbers.

2.
$$x^2 = -9$$

 $x = \sqrt{-9}$ or $x = -\sqrt{-9}$
 $x = 3i$ or $x = -3i$

These solutions are imaginary numbers.

4.
$$(x-2)^2 = -9$$

 $x-2 = \sqrt{-9}$ or $x-2 = -\sqrt{-9}$
 $x-2 = 3i$ or $x-2 = -3i$
 $x = 2 + 3i$ or $x = 2 + -3i$

These solutions are the sum of a real number and an imaginary number.

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

Consider these examples.

1.
$$x^2 = 9$$

 $x = \sqrt{9}$ or $x = -\sqrt{9}$
 $x = 3$ or $x = -3$

These solutions are real numbers.

3.
$$(x-2)^2 = 9$$

 $x-2 = \sqrt{9}$ or $x-2 = -\sqrt{9}$
 $x-2 = 3$ or $x-2 = -3$
 $x = 5$ or $x = -1$

These solutions are real numbers.

2.
$$x^2 = -9$$

x = $\sqrt{-9}$ or x = $-\sqrt{-9}$
x = 3i or x = -3i

These solutions are imaginary numbers.

4.
$$(x-2)^2 = -9$$

 $x-2 = \sqrt{-9}$ or $x-2 = -\sqrt{-9}$
 $x-2 = 3i$ or $x-2 = -3i$
 $x = 2 + 3i$ or $x = 2 + -3i$

These solutions are the sum of a real number and an **imaginary number.** They are **complex numbers.**

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

Consider these examples.

1.
$$x^2 = 9$$

 $x = \sqrt{9}$ or $x = -\sqrt{9}$
 $x = 3$ or $x = -3$

These solutions are real numbers.

3.
$$(x-2)^2 = 9$$

 $x-2 = \sqrt{9}$ or $x-2 = -\sqrt{9}$
 $x-2 = 3$ or $x-2 = -3$
 $x = 5$ or $x = -1$

These solutions are real numbers.

2.
$$x^2 = -9$$

 $x = \sqrt{-9}$ or $x = -\sqrt{-9}$
 $x = 3i$ or $x = -3i$

These solutions are imaginary numbers.

4.
$$(x-2)^2 = -9$$

 $x-2 = \sqrt{-9}$ or $x-2 = -\sqrt{-9}$
 $x-2 = 3i$ or $x-2 = -3i$
 $x = 2 + 3i$ or $x = 2 + -3i$

These solutions are the sum of a real number and an imaginary number. They are **complex numbers**.

The 'Square Root Property' is used to solve equations of the form $N^2 = k$. The square root property states 'If $N^2 = k$, then $N = \sqrt{k}$ or $N = -\sqrt{k}$.'

Consider these examples.

1.
$$x^2 = 9$$

 $x = \sqrt{9}$ or $x = -\sqrt{9}$
 $x = 3$ or $x = -3$

These solutions are real numbers.

3.
$$(x-2)^2 = 9$$

 $x-2 = \sqrt{9}$ or $x-2 = -\sqrt{9}$
 $x-2 = 3$ or $x-2 = -3$
 $x = 5$ or $x = -1$

These solutions are real numbers.

2.
$$x^2 = -9$$

 $x = \sqrt{-9}$ or $x = -\sqrt{-9}$
 $x = 3i$ or $x = -3i$

These solutions are imaginary numbers.

4.
$$(x-2)^2 = -9$$

 $x-2 = \sqrt{-9}$ or $x-2 = -\sqrt{-9}$
 $x-2 = 3i$ or $x-2 = -3i$
 $x = 2 + 3i$ or $x = 2 + -3i$

These solutions are the sum of a real number and an imaginary number. They are complex numbers.

A <u>complex number</u> is defined to be <u>any number</u> that can be expressed in the form <u>a + bi</u> where <u>a</u> and <u>b</u> are real numbers and $i = \sqrt{-1}$.

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The Real Number System

The Real Number SystemSubsets of the Real NumbersThe Natural Numbers:

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(These are also called the counting numbers.)

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The Whole Numbers: $W = \{0, 1, 2, 3, 4, ... \}$

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The Whole Numbers: $W = \{0, 1, 2, 3, 4, ... \}$

The Integers:

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The Integers: I = { ..., -4, -3, -2, -1, 0, 1, 2, 3, 4, ... }

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The Rational Numbers:

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The Rational Numbers: Any number that can be expressed as the ratio of two integers is a rational number.

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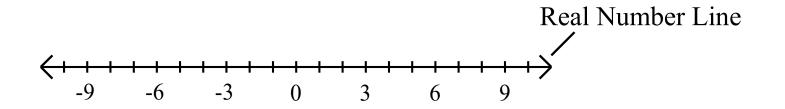
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The set of Real Numbers can be represented by a number line.

The Real Number System



The Real Numbers

The Real Numbers

The Imaginary Numbers

The Real Numbers

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The Real Numbers

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Any number that can be represented in the form **bi**, where b is a real number and $i = \sqrt{-1}$, is an imaginary number.

The Complex Numbers

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The Complex Numbers

Any number that can be represented in the form $\mathbf{a} + \mathbf{bi}$, where a and b are real numbers and $\mathbf{i} = \sqrt{-1}$, is a complex number.

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Note: If $\mathbf{a} = \mathbf{0}$, then $\mathbf{a} + \mathbf{bi}$ represents an imaginary number, and if $\mathbf{b} = \mathbf{0}$, then $\mathbf{a} + \mathbf{bi}$ represents a real number.

The Real Numbers

The Imaginary Numbers

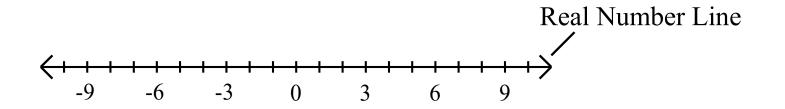
Any number that can be represented in the form **bi**, where b is a real number and $i = \sqrt{-1}$, is an imaginary number.

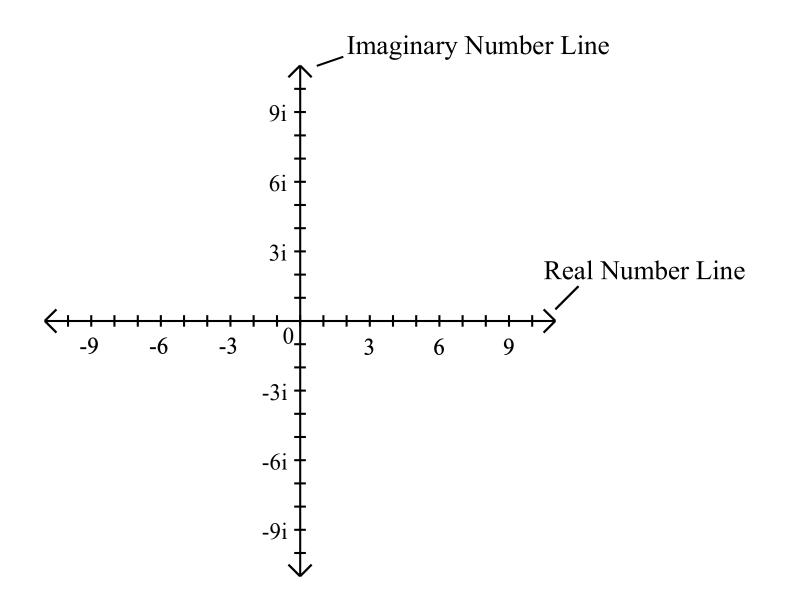
The Complex Numbers

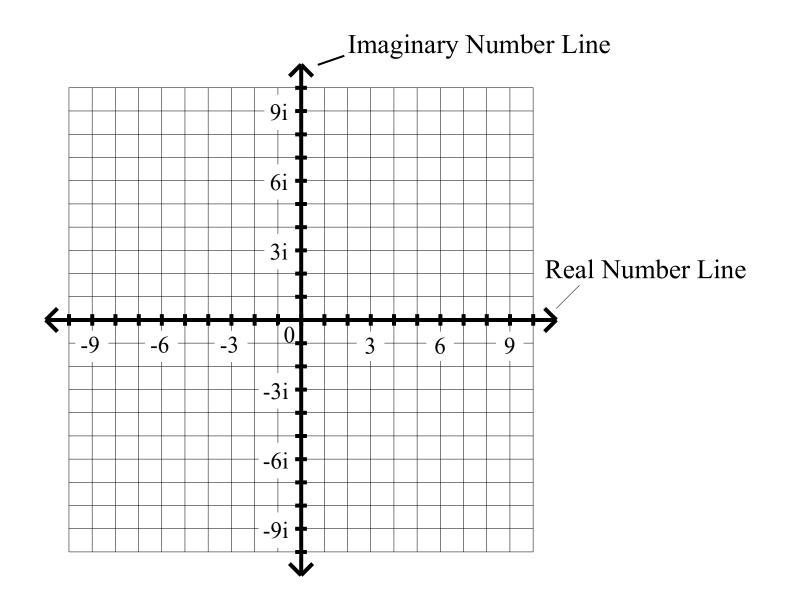
Any number that can be represented in the form $\mathbf{a} + \mathbf{bi}$, where a and b are real numbers and $\mathbf{i} = \sqrt{-1}$, is a complex number.

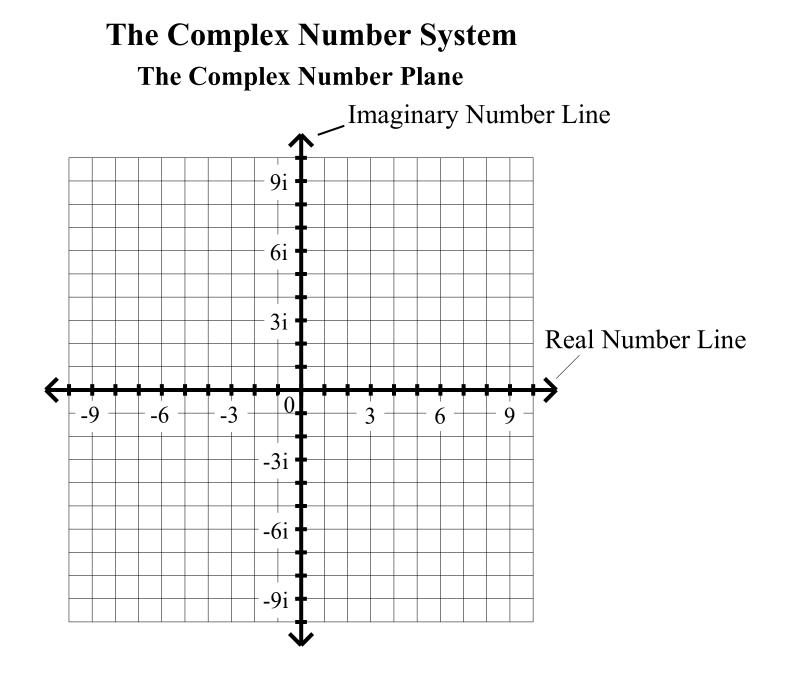
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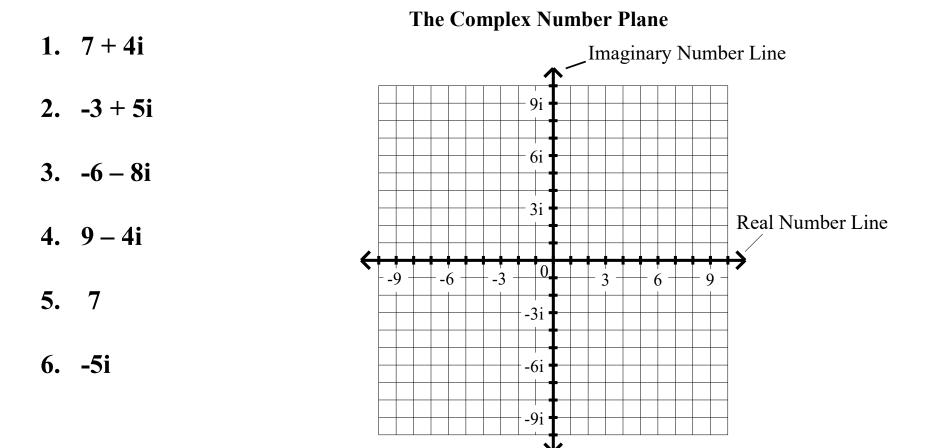
The set of Complex Numbers can be represented by a number plane.

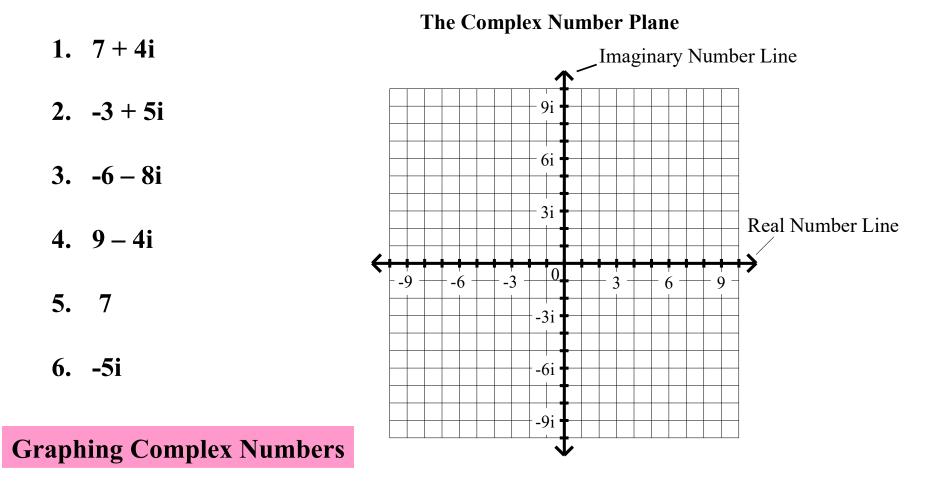


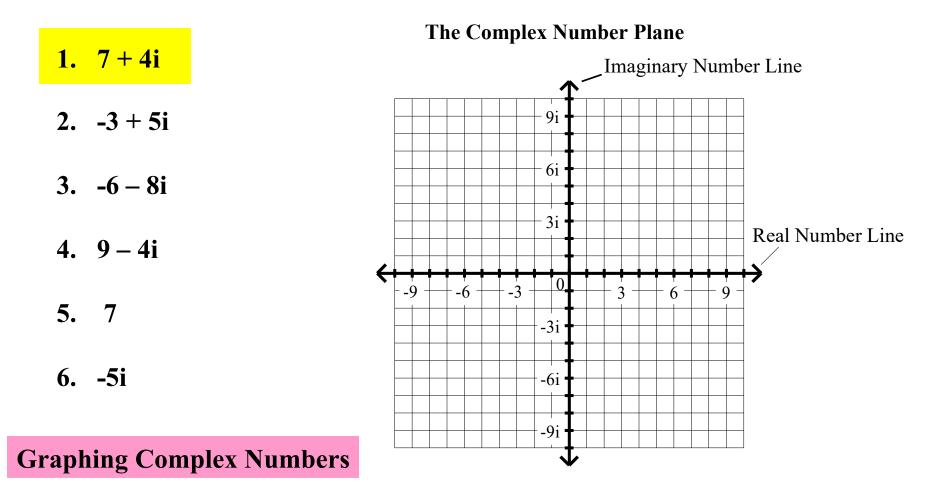




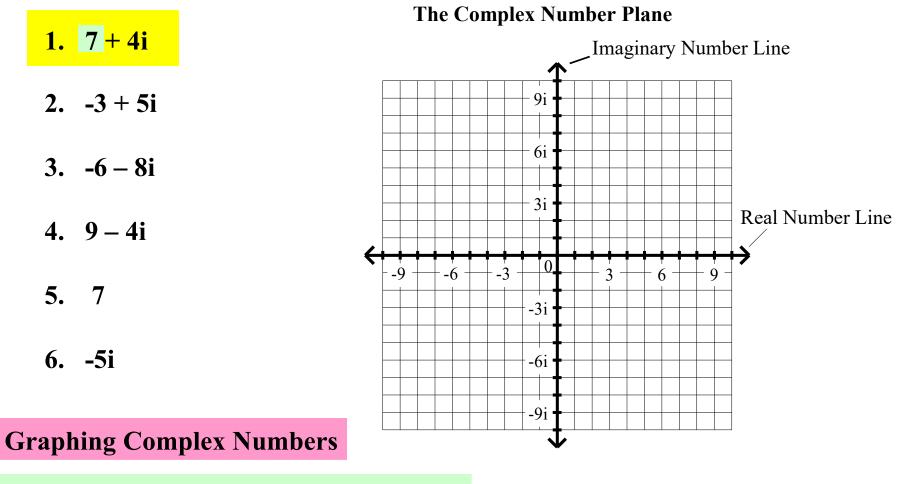






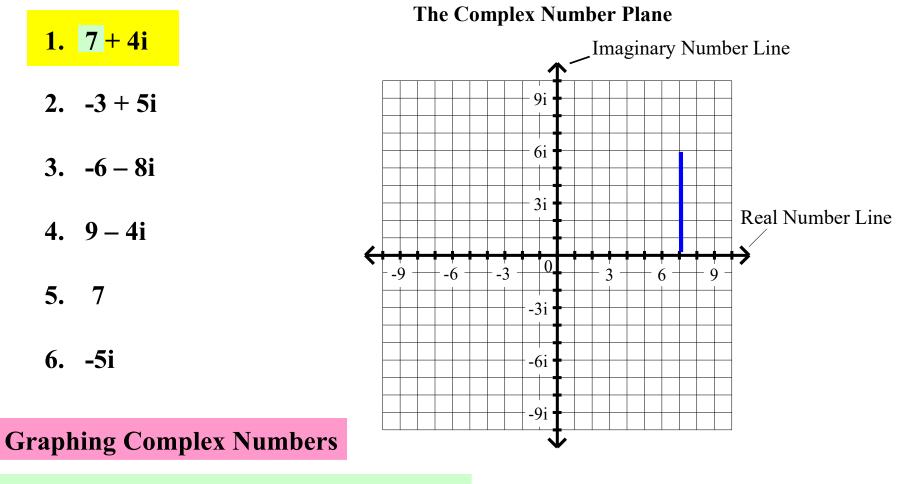


Graph each of the following numbers on the complex number plane. Label your graphs properly.



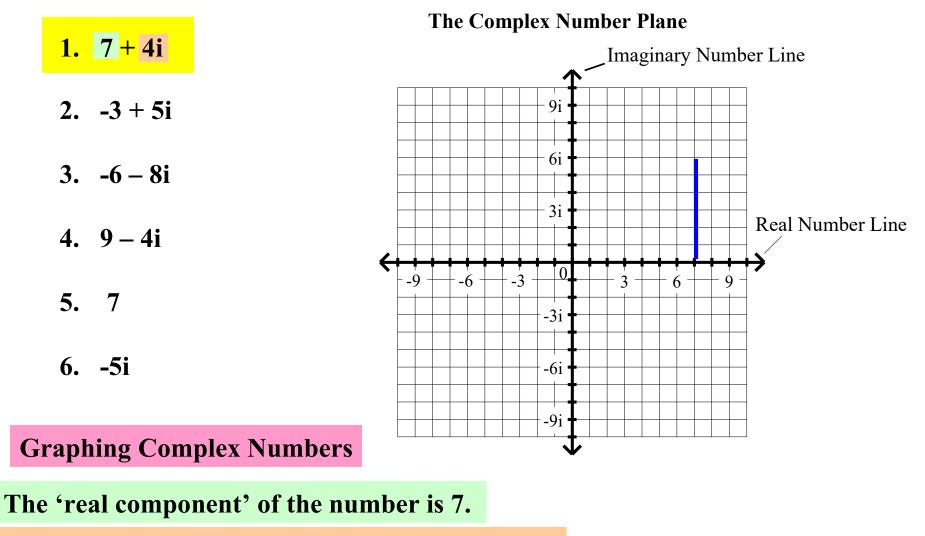
The 'real component' of the number is 7.

Graph each of the following numbers on the complex number plane. Label your graphs properly.

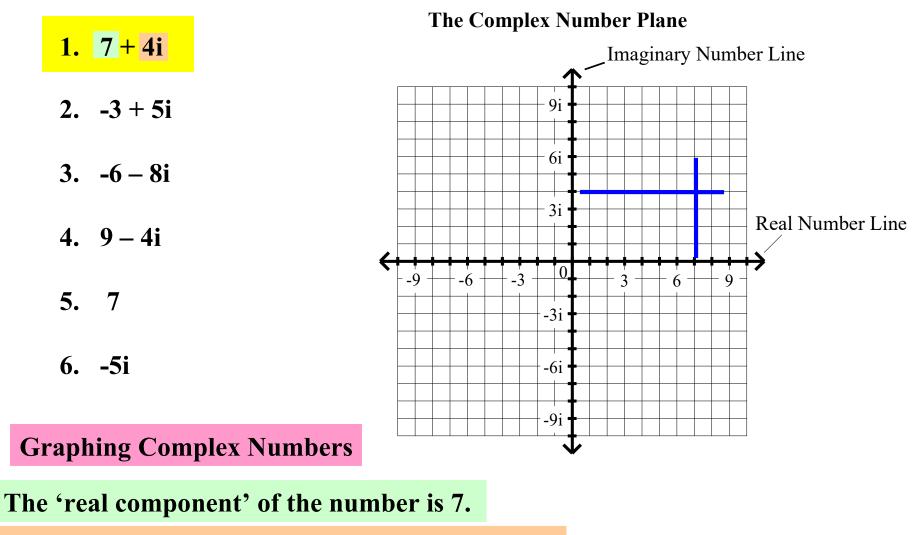


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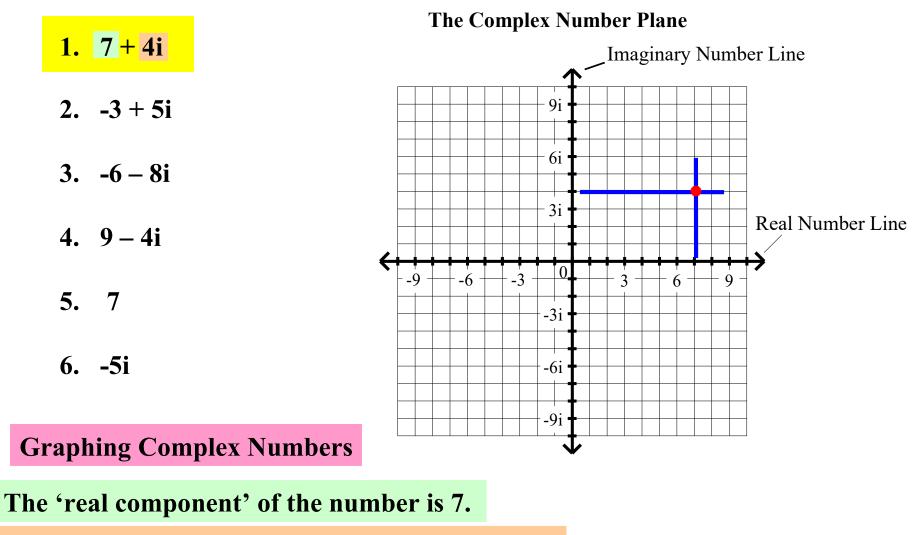
Graph each of the following numbers on the complex number plane. Label your graphs properly.



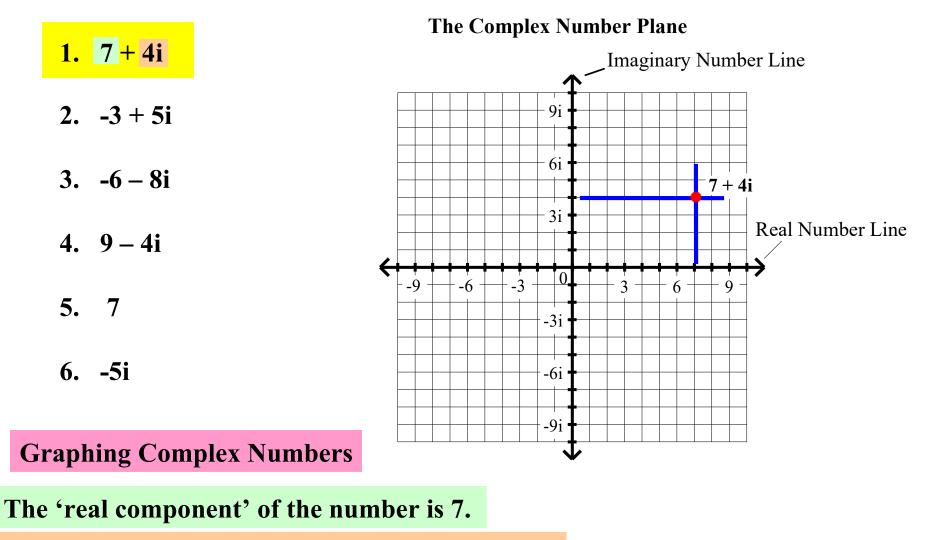
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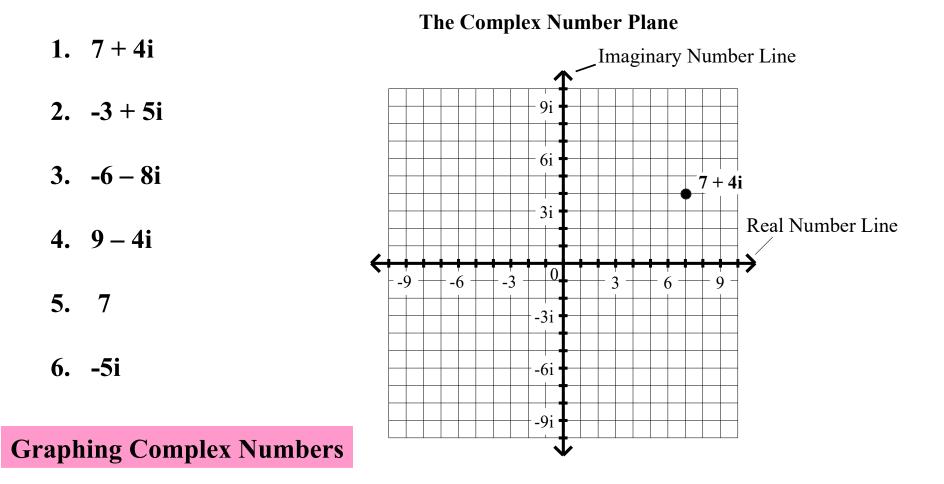


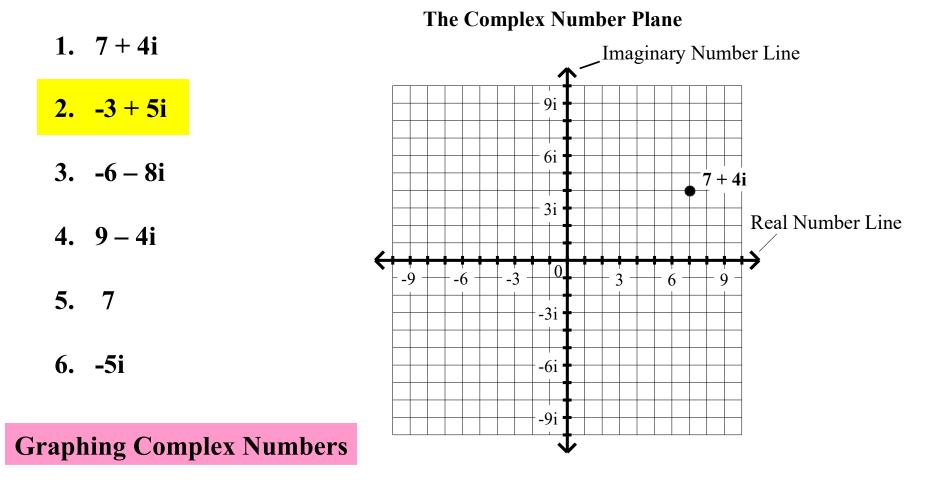
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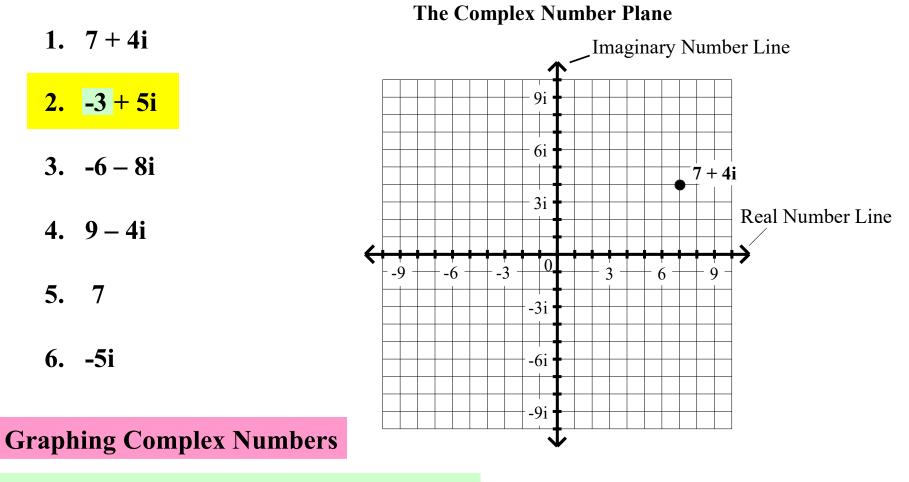
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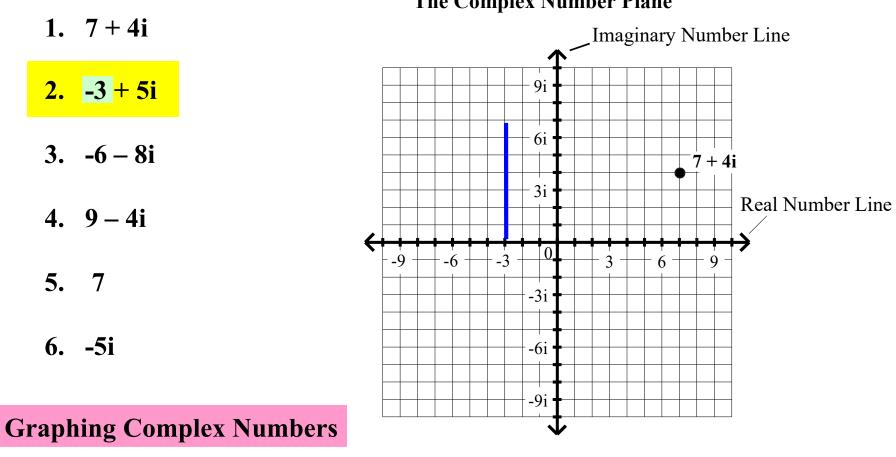


Graph each of the following numbers on the complex number plane. Label your graphs properly.



The 'real component' of the number is -3.

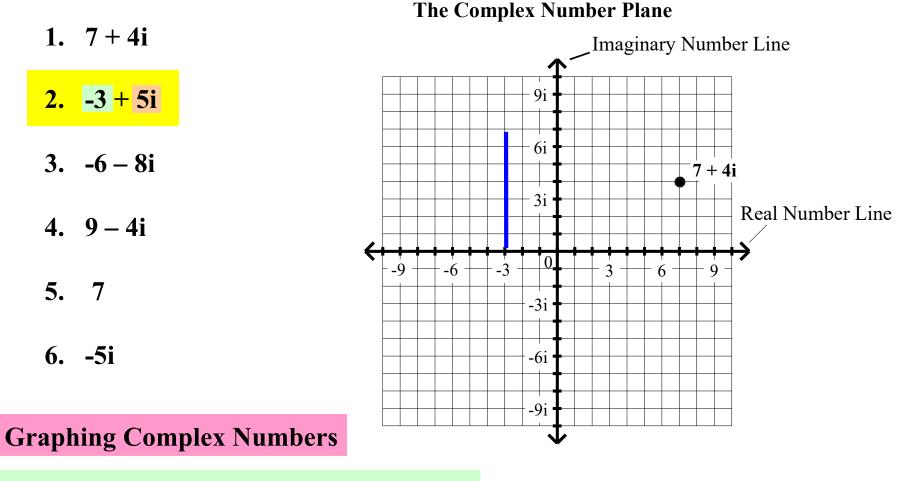
Graph each of the following numbers on the complex number plane. Label your graphs properly.



The Complex Number Plane

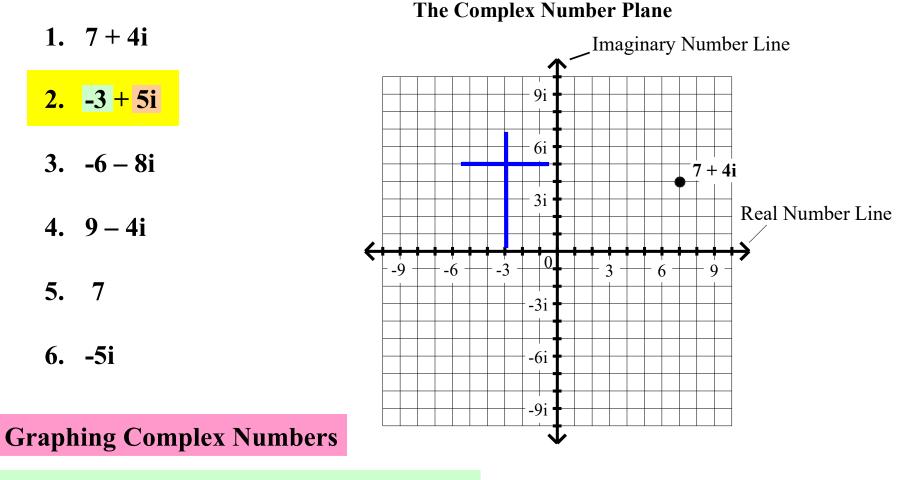
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Graph each of the following numbers on the complex number plane. Label your graphs properly.



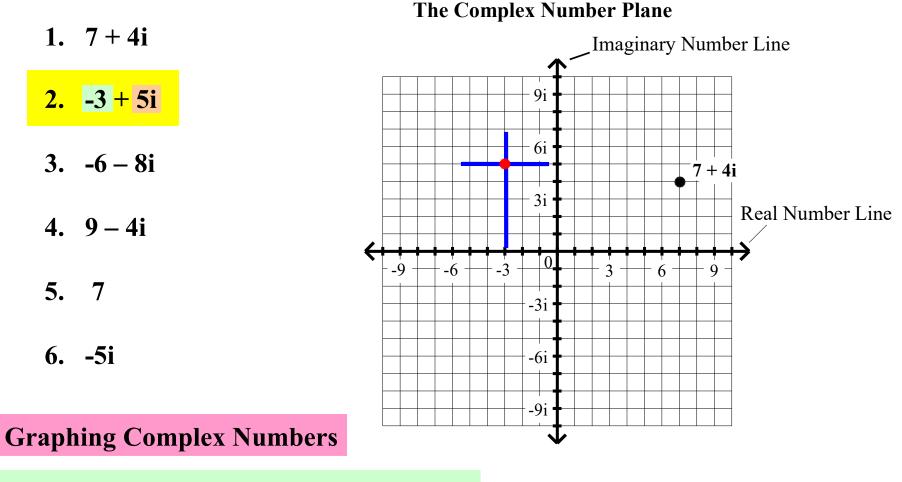
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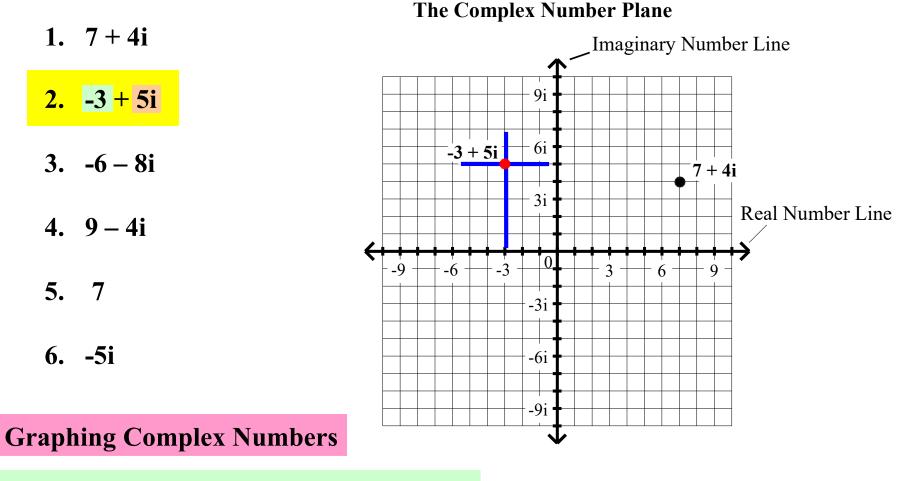
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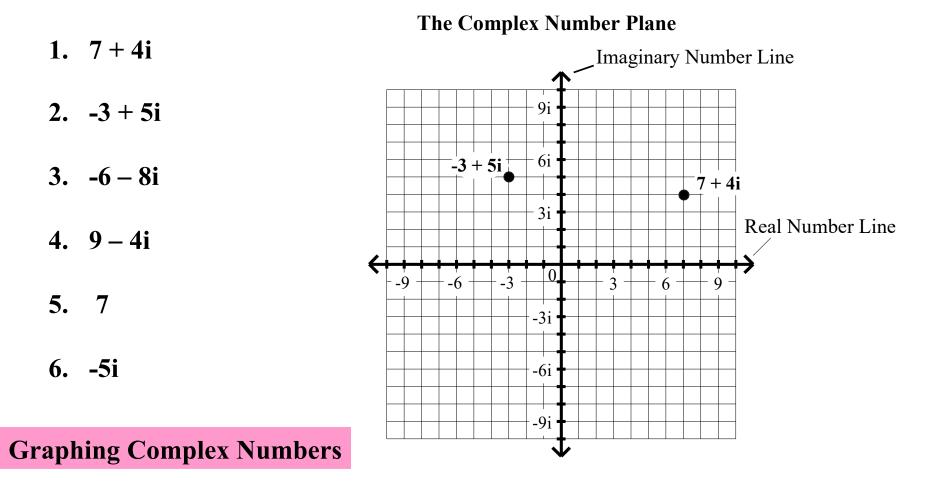


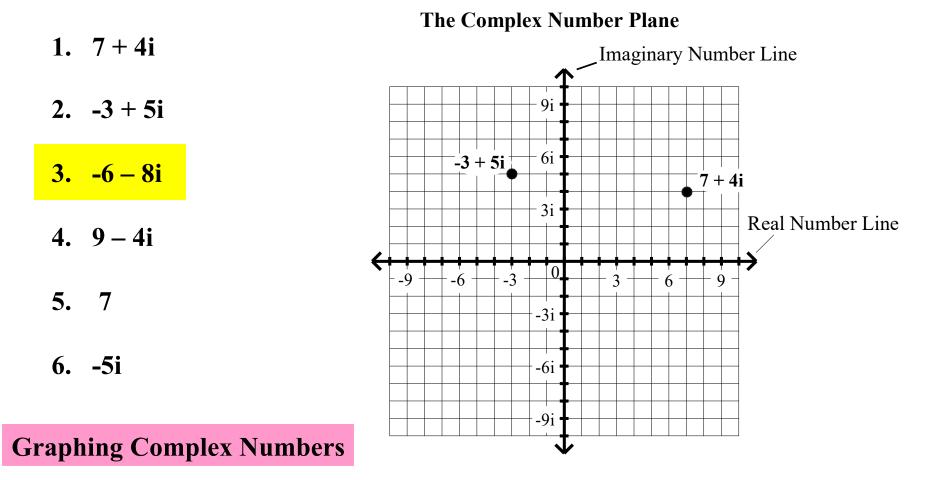
The 'real component' of the number is -3.

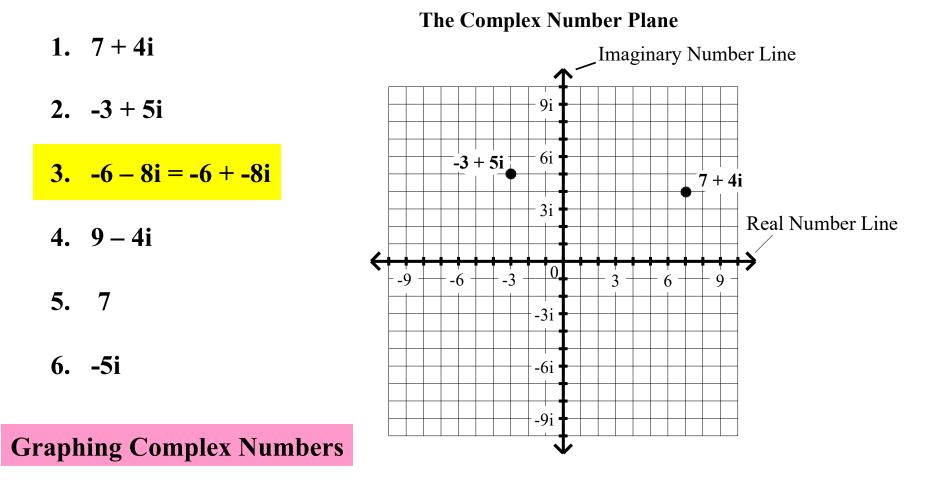
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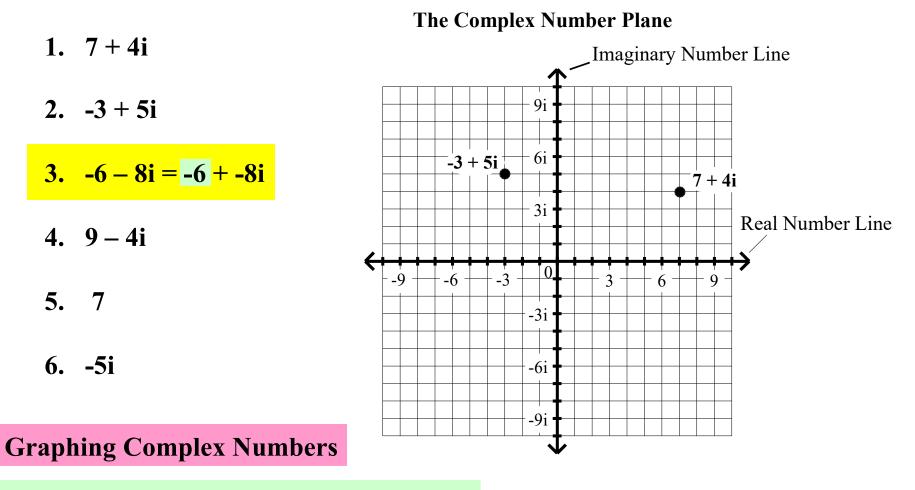
The 'real component' of the number is -3.





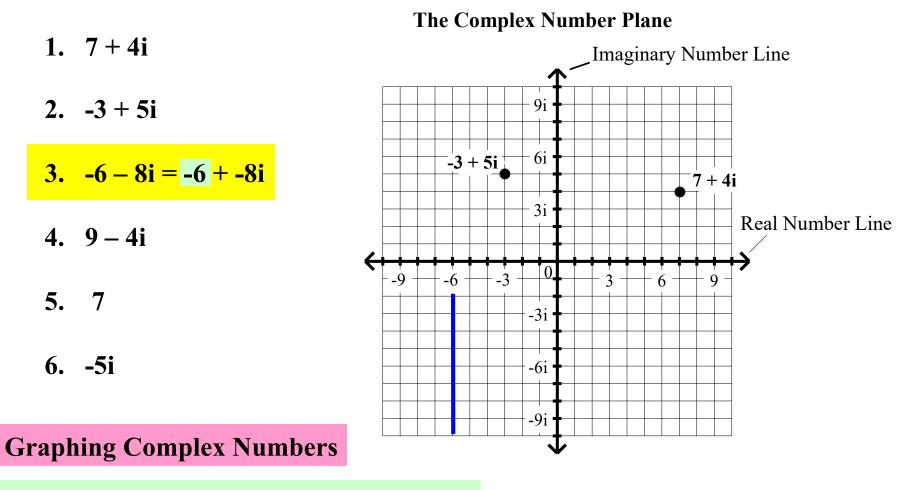


Graph each of the following numbers on the complex number plane. Label your graphs properly.



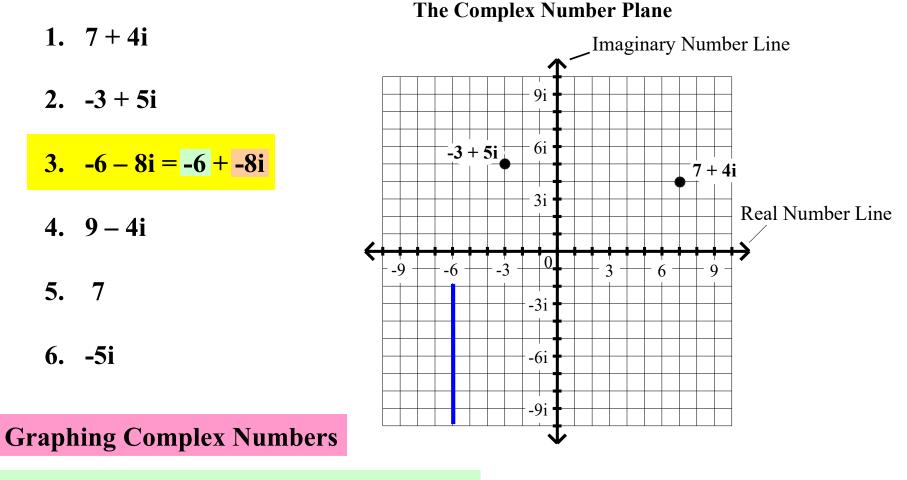
The 'real component' of the number is -6.

Graph each of the following numbers on the complex number plane. Label your graphs properly.



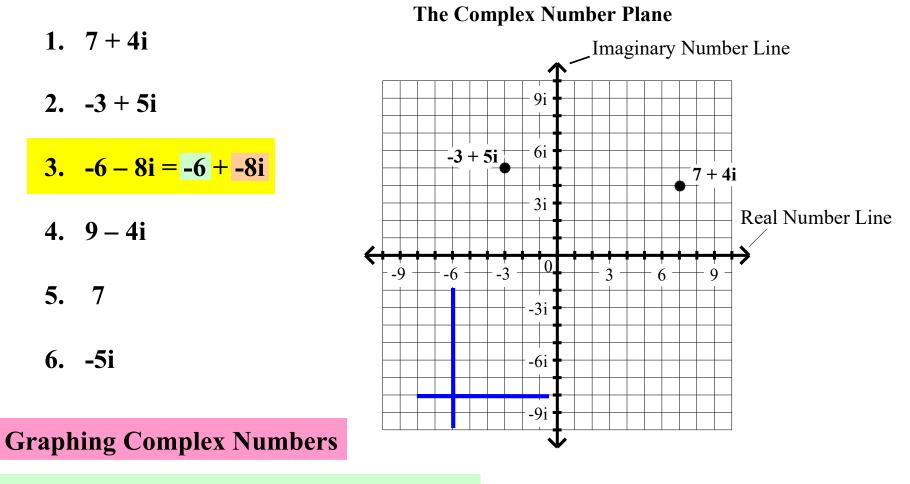
The 'real component' of the number is -6.

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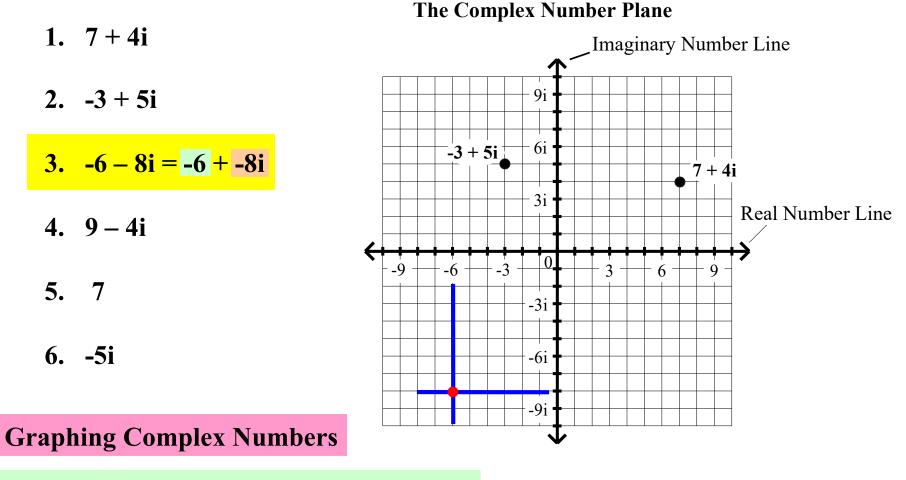
The 'real component' of the number is -6.

Graph each of the following numbers on the complex number plane. Label your graphs properly.



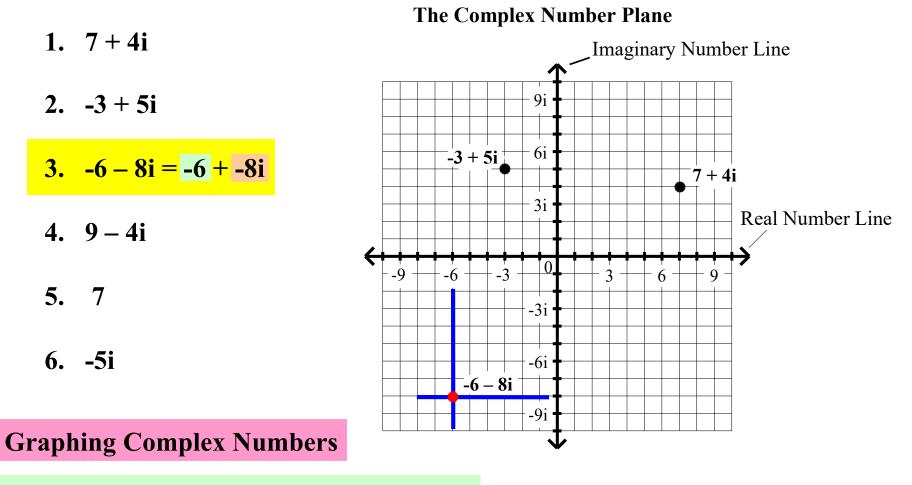
The 'real component' of the number is -6.

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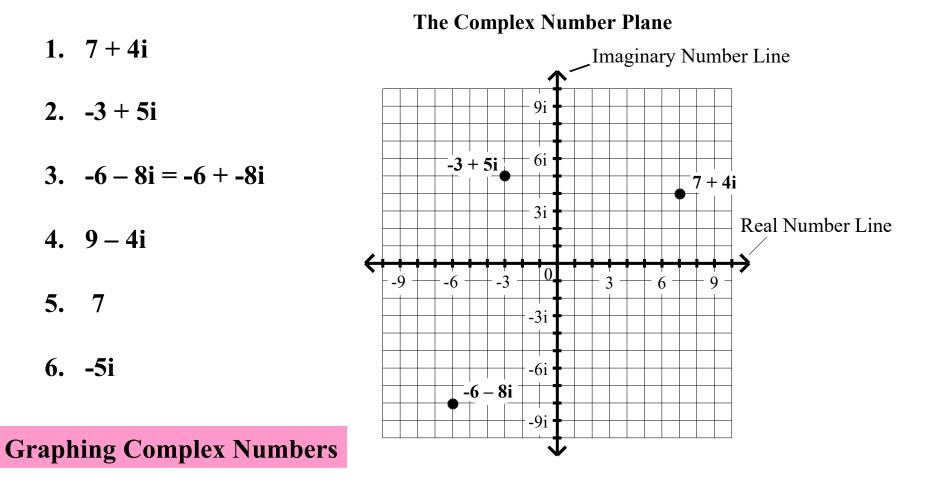


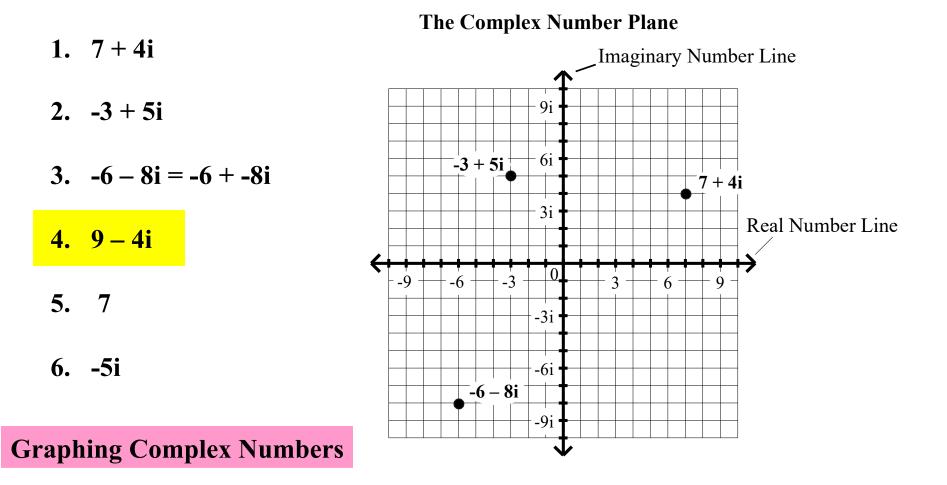
The 'real component' of the number is -6.

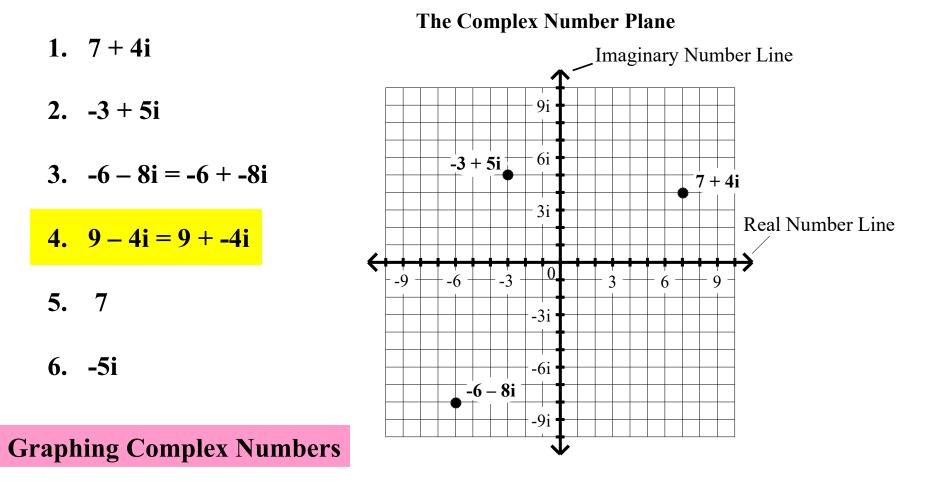
Graph each of the following numbers on the complex number plane. Label your graphs properly.



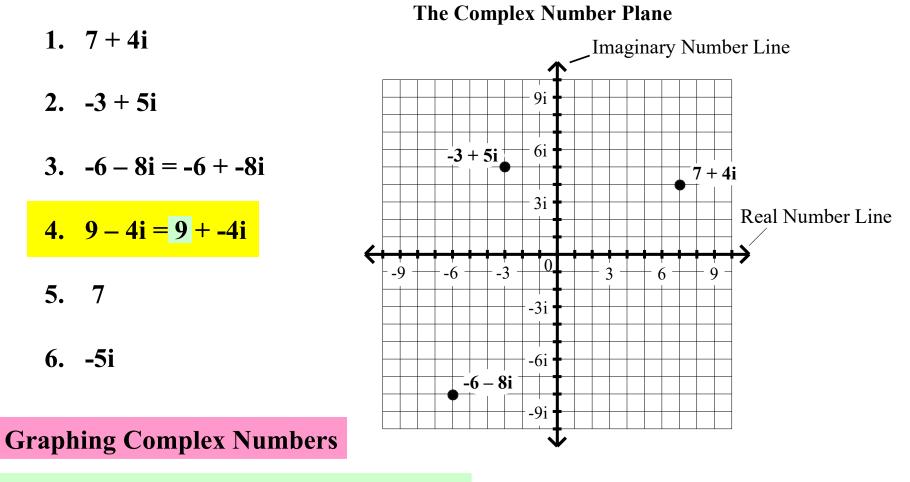
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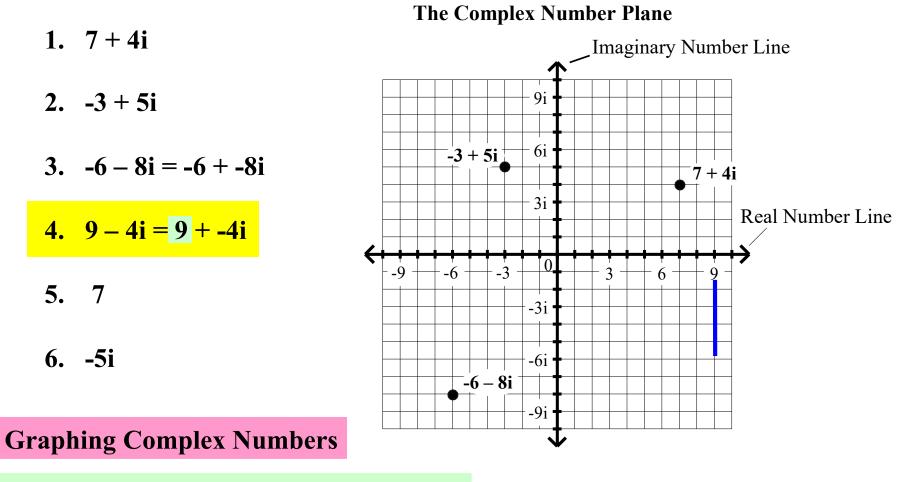


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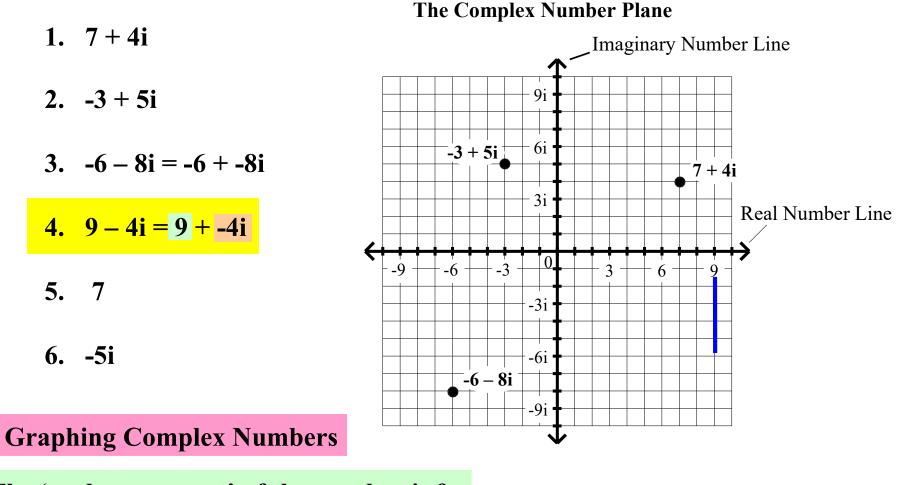
The 'real component' of the number is 9.

Graph each of the following numbers on the complex number plane. Label your graphs properly.



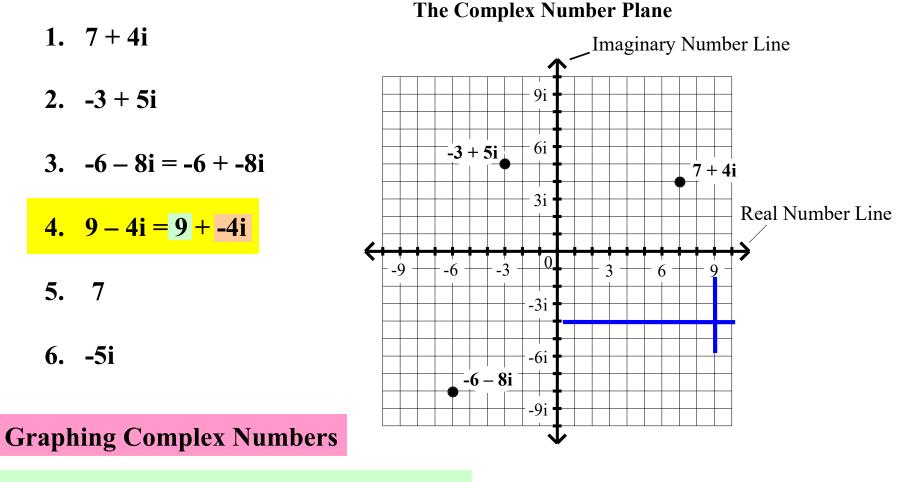
The 'real component' of the number is 9.

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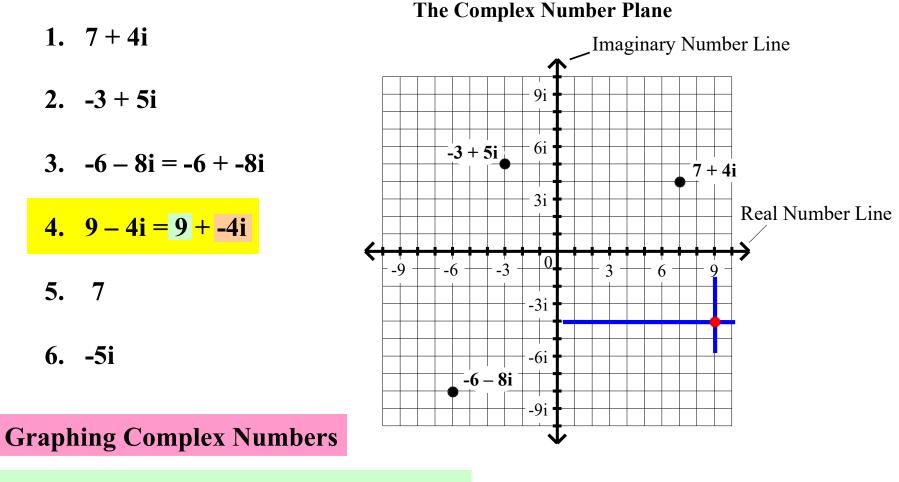
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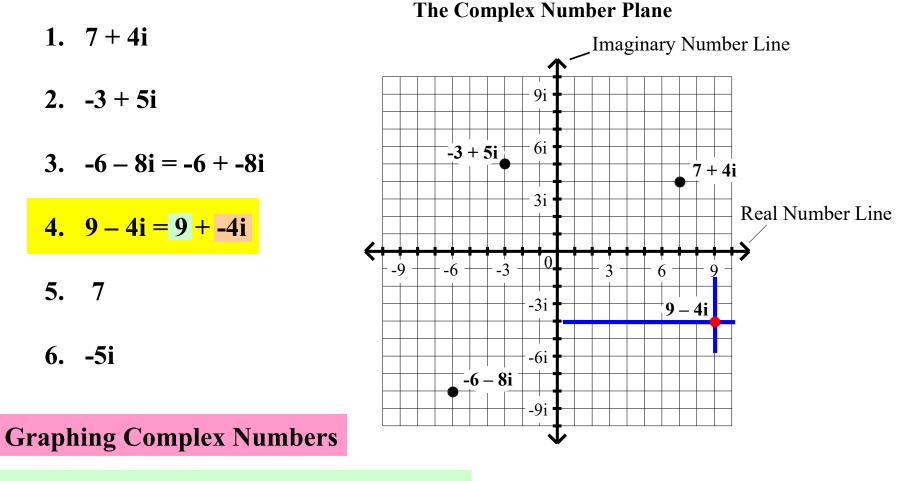
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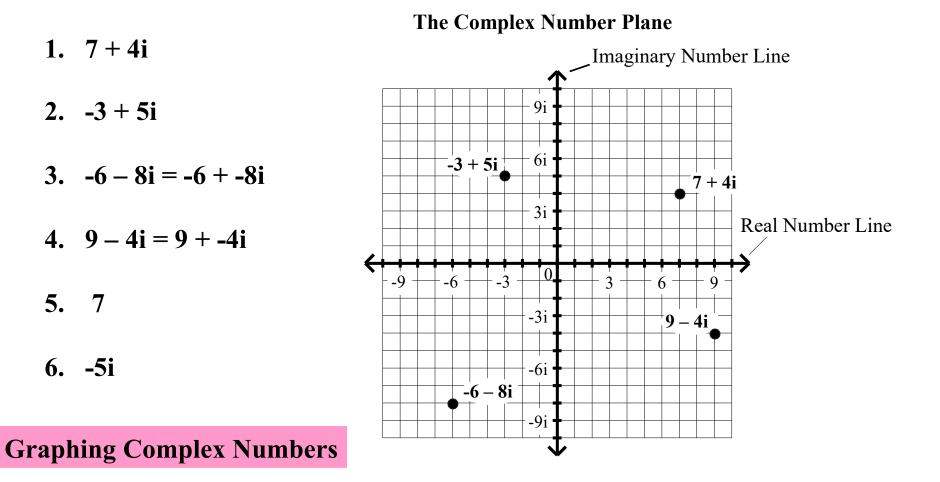


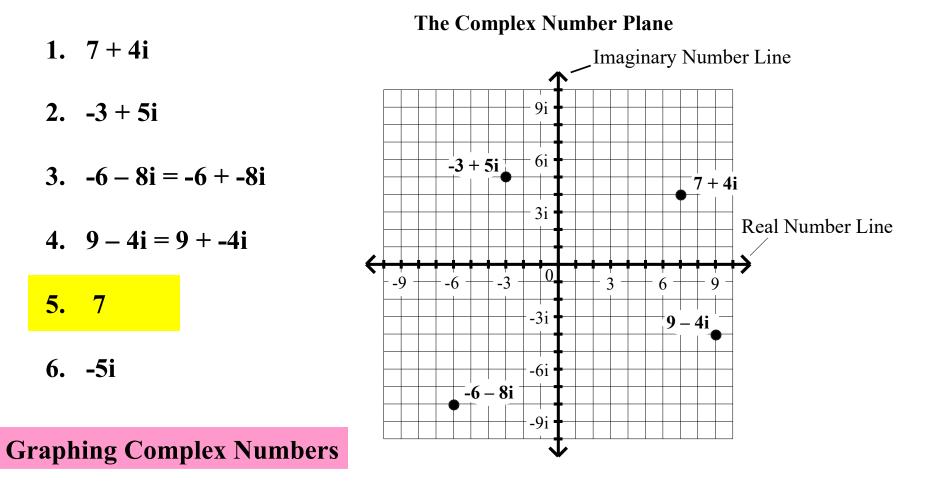
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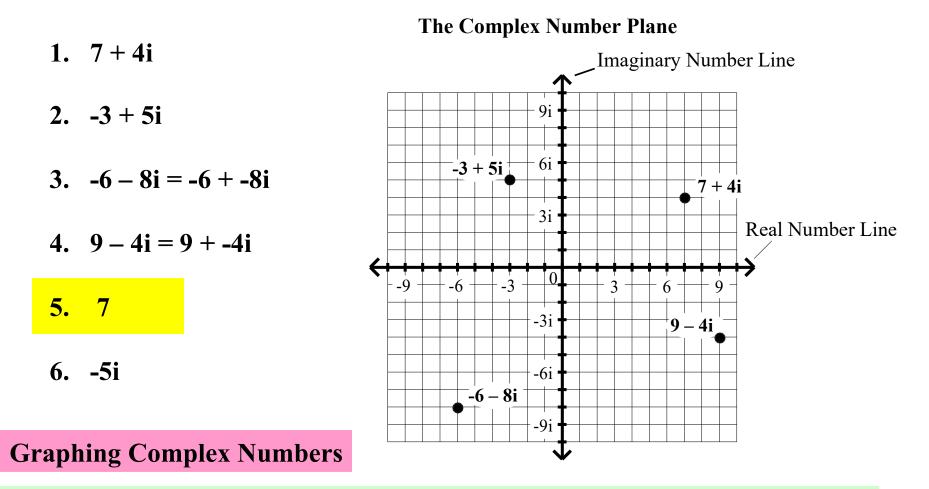


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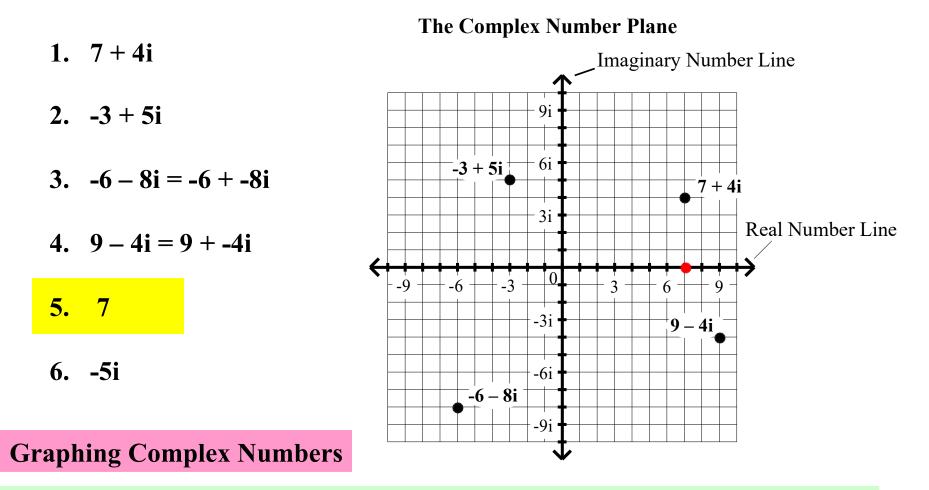


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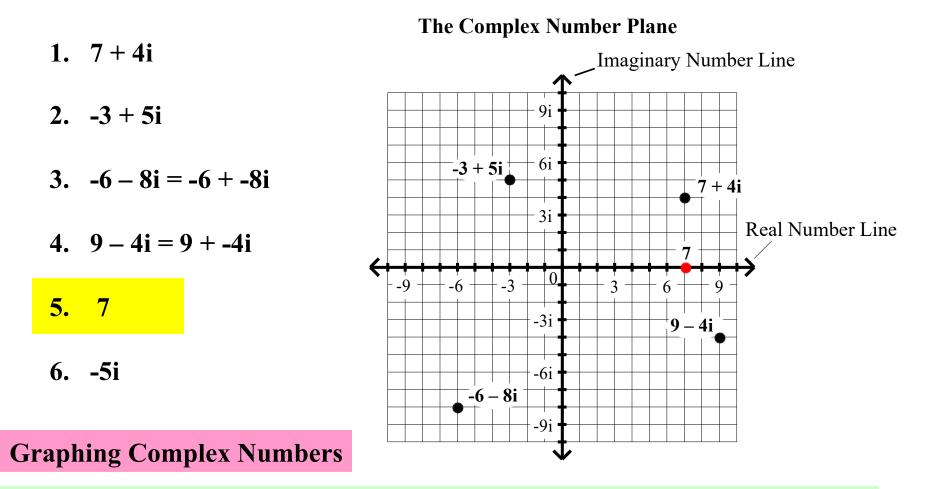
Any real number is associated with a unique point on the real number line.

Graph each of the following numbers on the complex number plane. Label your graphs properly.

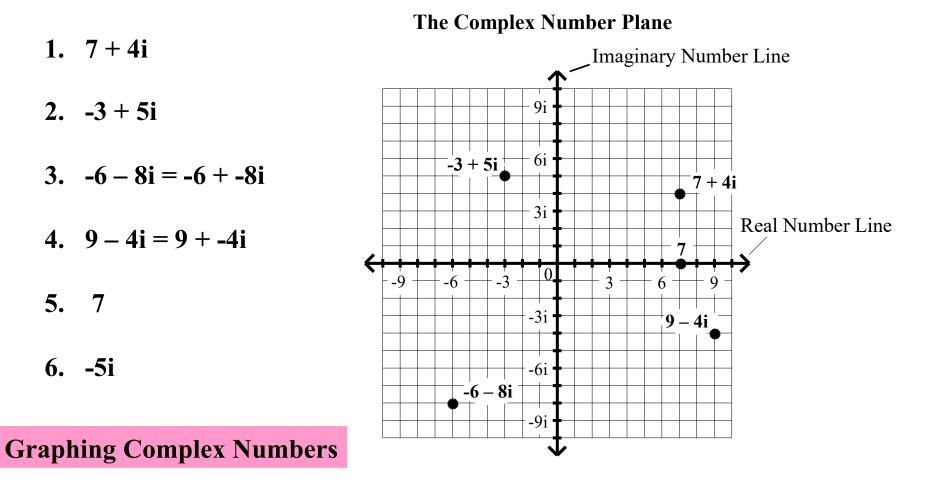


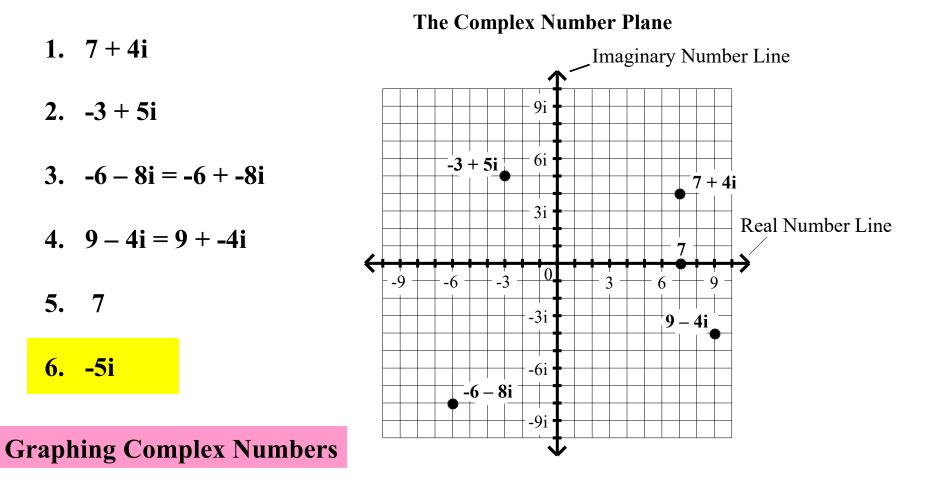
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Graph each of the following numbers on the complex number plane. Label your graphs properly.

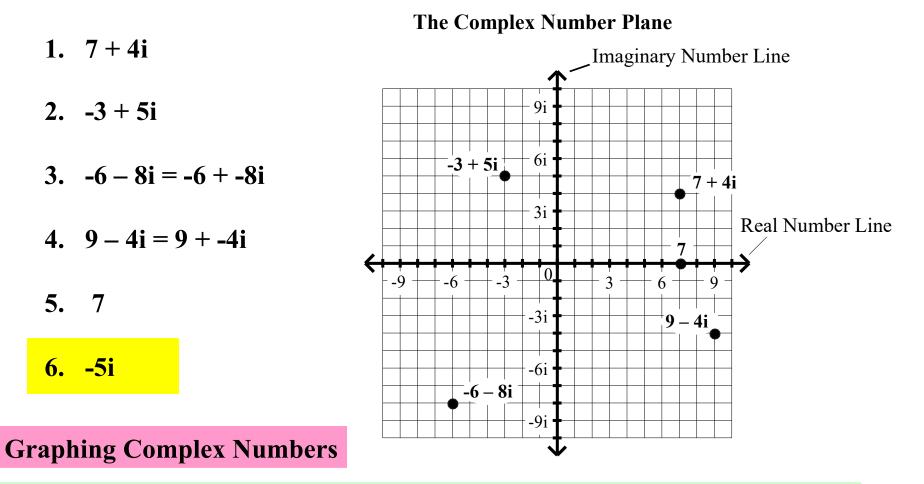


Any real number is associated with a unique point on the real number line.



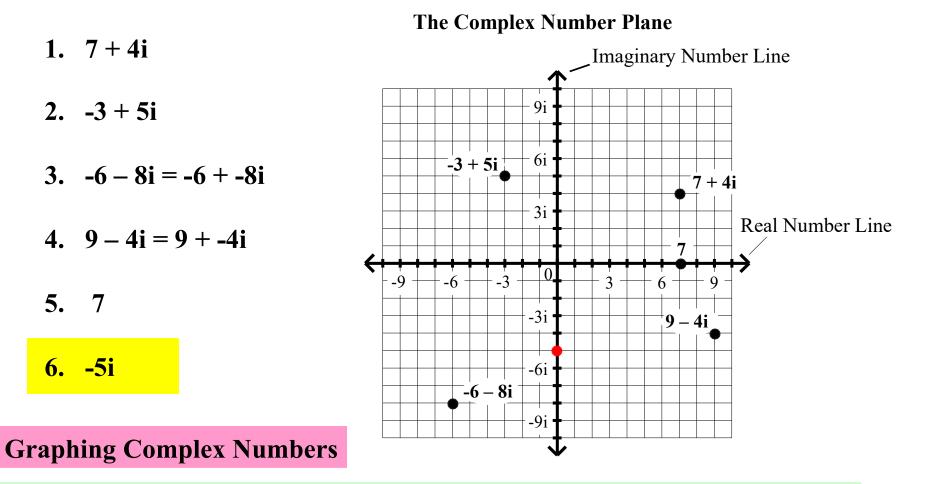


Graph each of the following numbers on the complex number plane. Label your graphs properly.



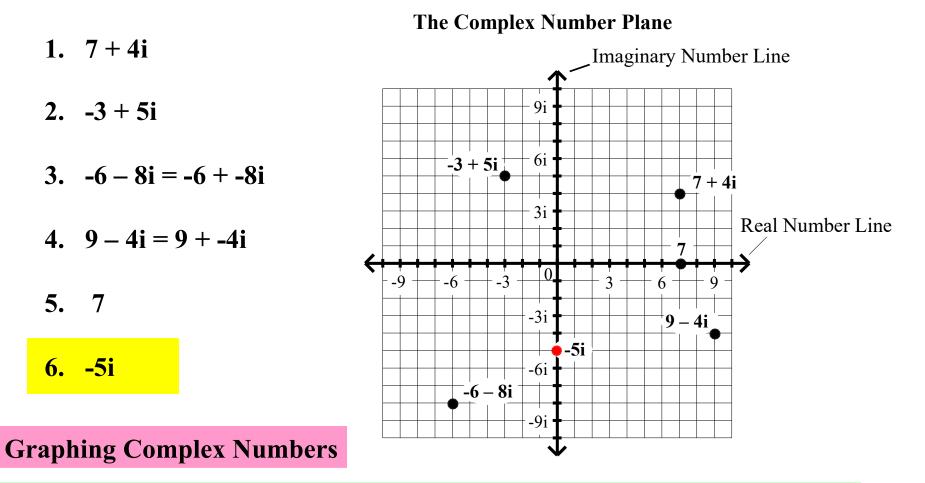
Any imaginary number is associated with a unique point on the imaginary number line.

Graph each of the following numbers on the complex number plane. Label your graphs properly.



Any imaginary number is associated with a unique point on the imaginary number line.

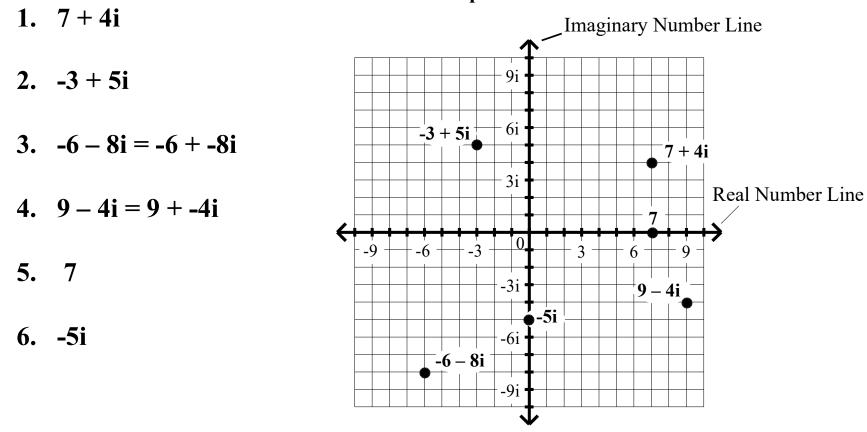
Graph each of the following numbers on the complex number plane. Label your graphs properly.

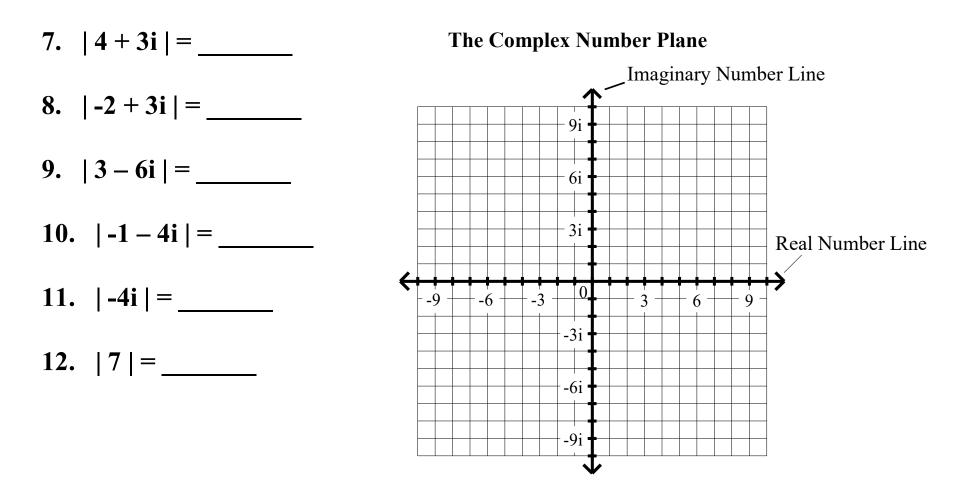


Any imaginary number is associated with a unique point on the imaginary number line.

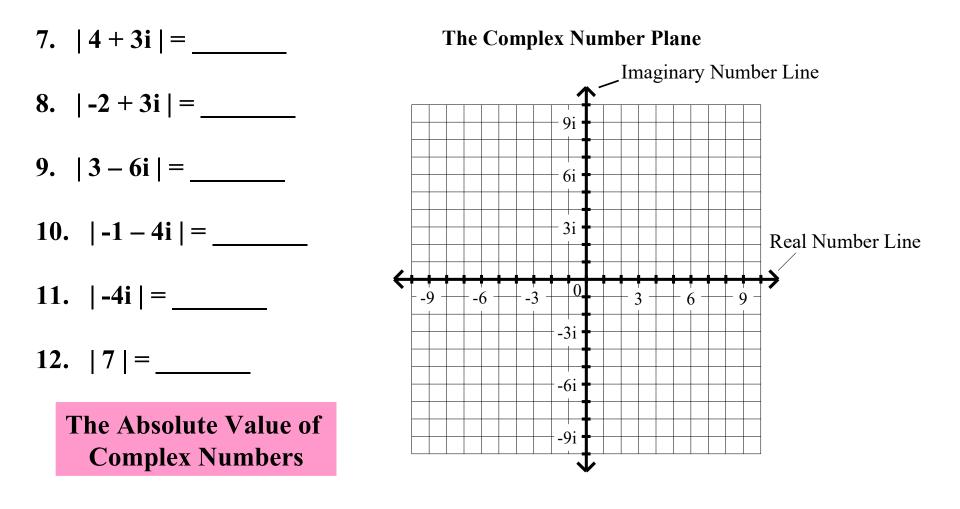
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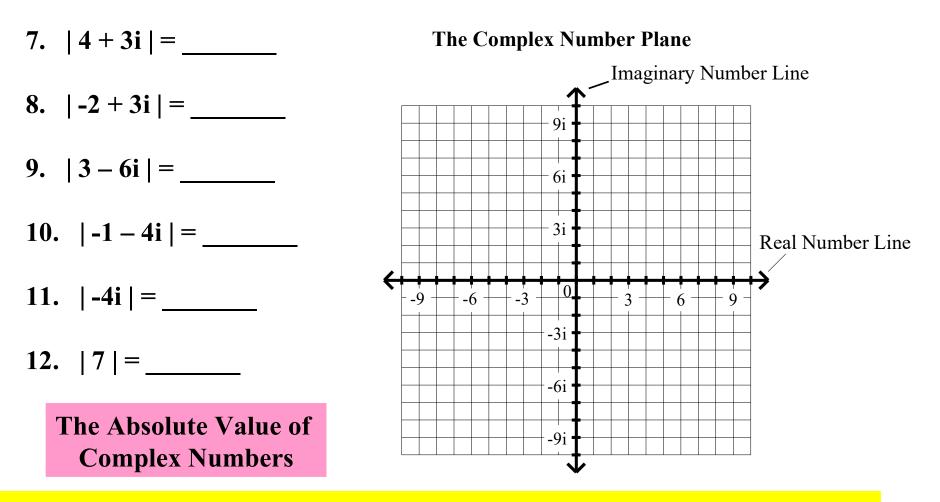
The Complex Number Plane



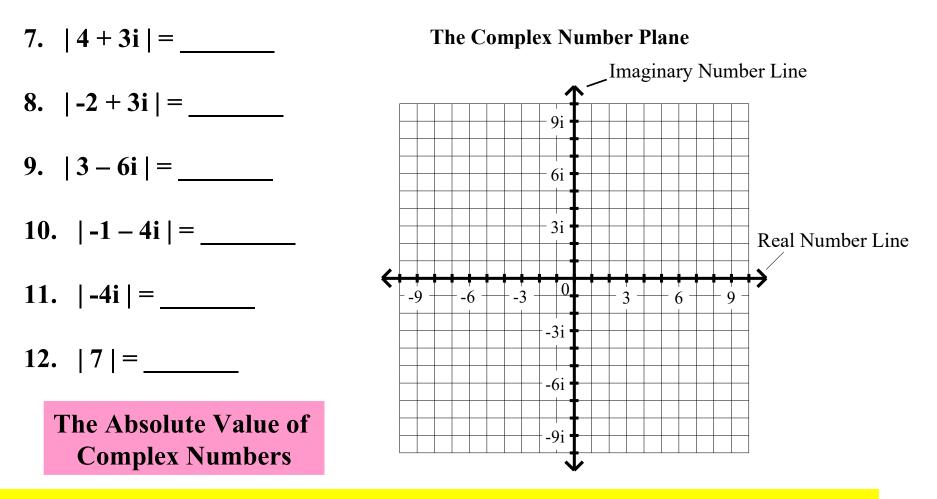


Find the indicated absolute values. Express your answers in simplest form.

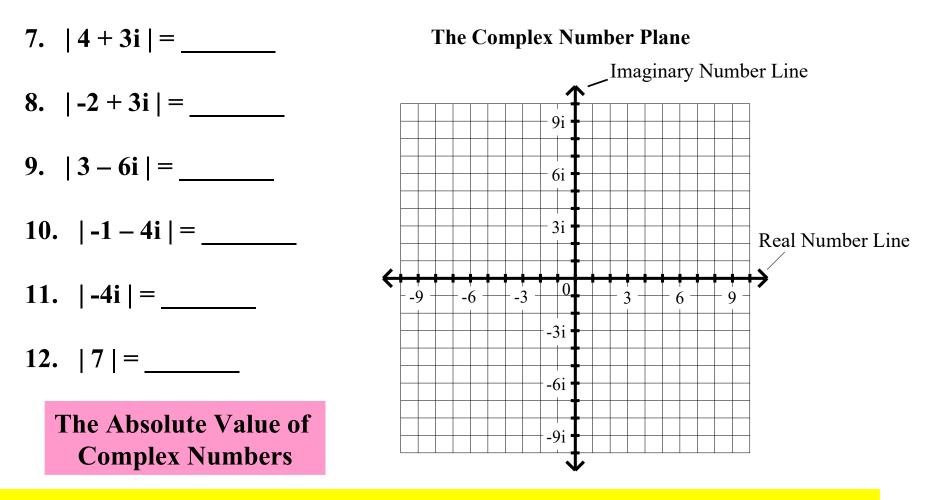




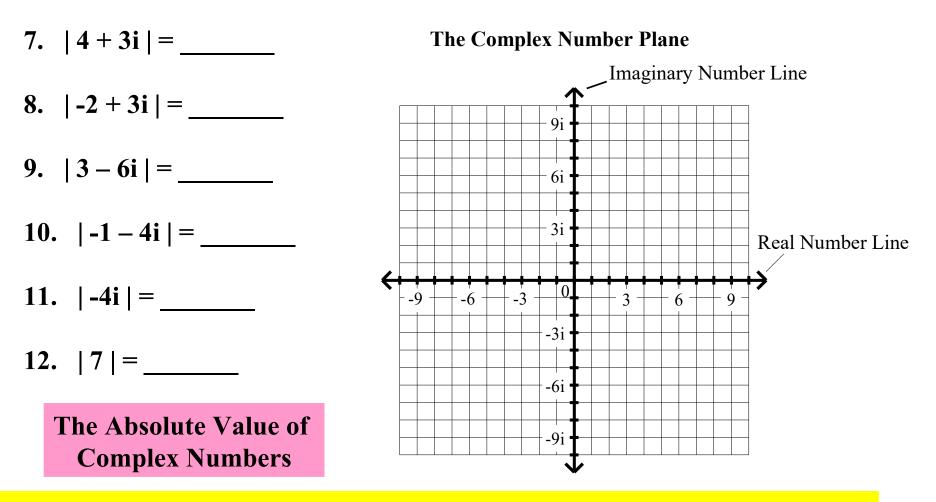
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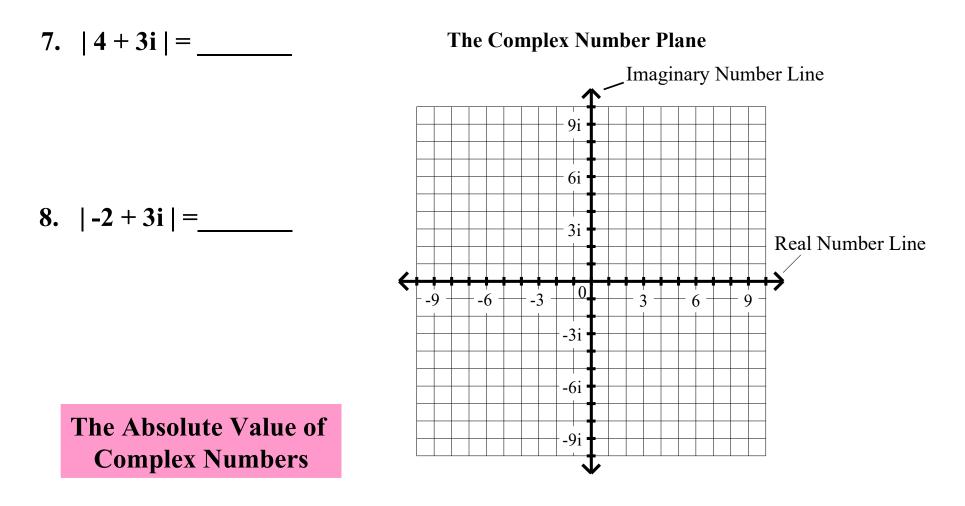


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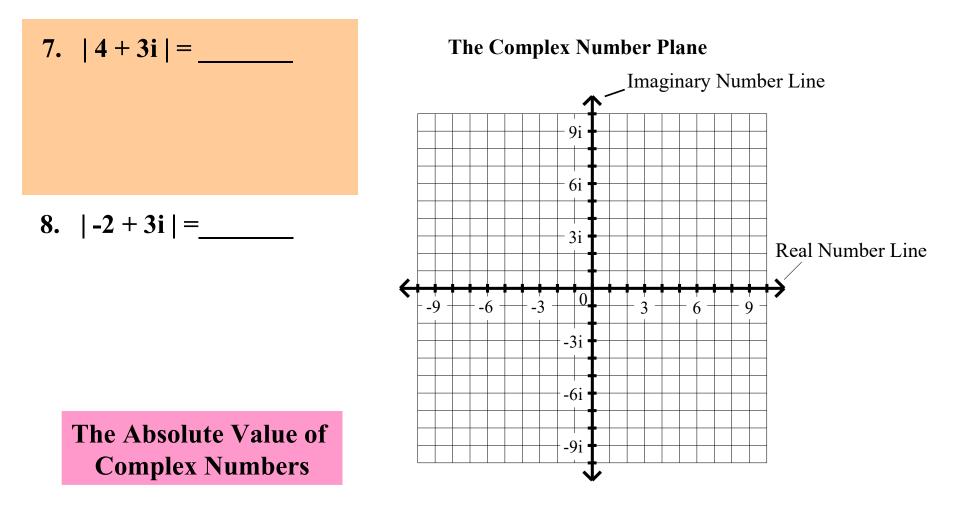


The absolute value of a real number gives its <u>distance</u> from zero on the real number line. This 'definition' holds true for complex numbers as well. Of course, distance is <u>never negative</u> and is <u>always</u> a <u>real number</u>.

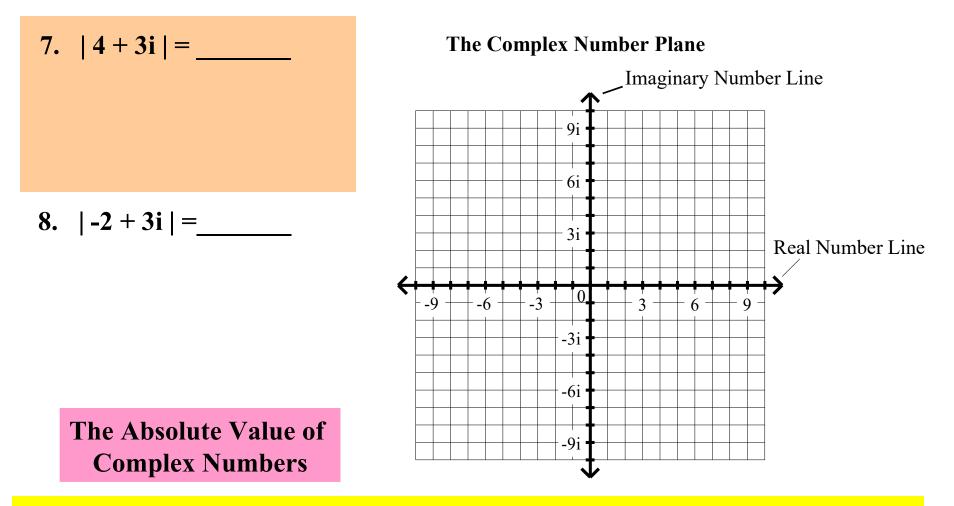
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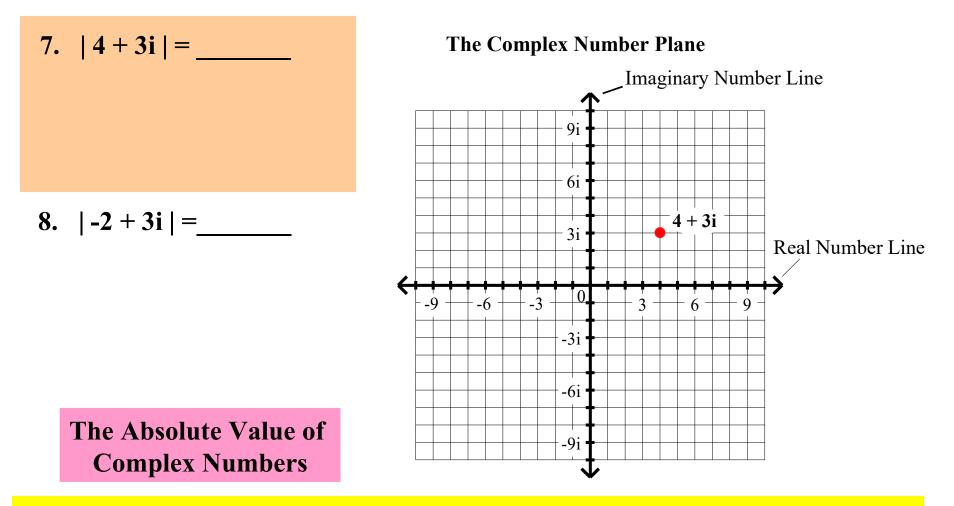


Find the indicated absolute values. Express your answers in simplest form.



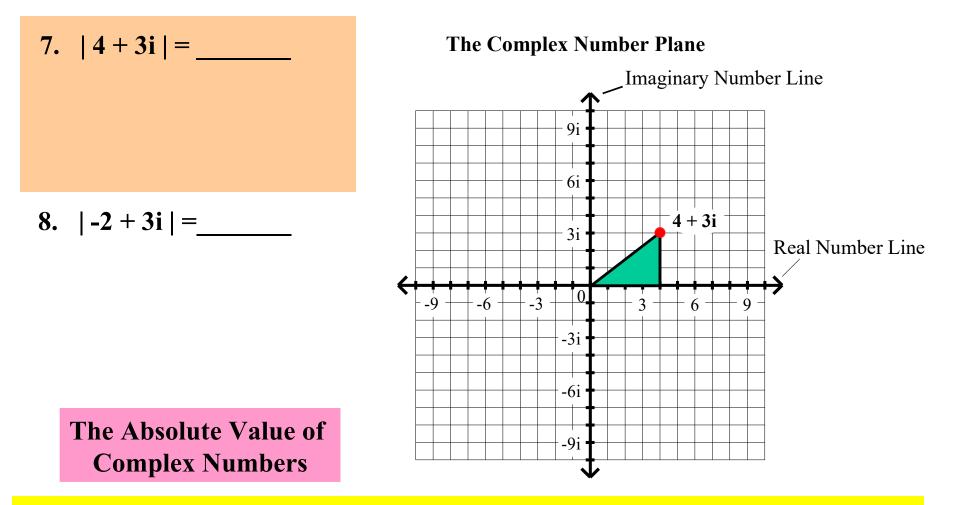
The absolute value of the complex number 4 + 3i is the distance this number is from zero.

Find the indicated absolute values. Express your answers in simplest form.



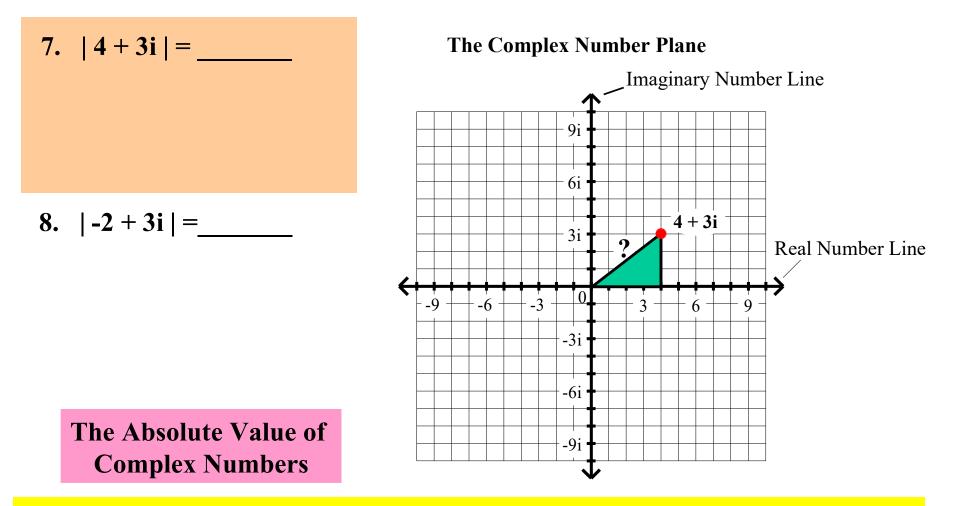
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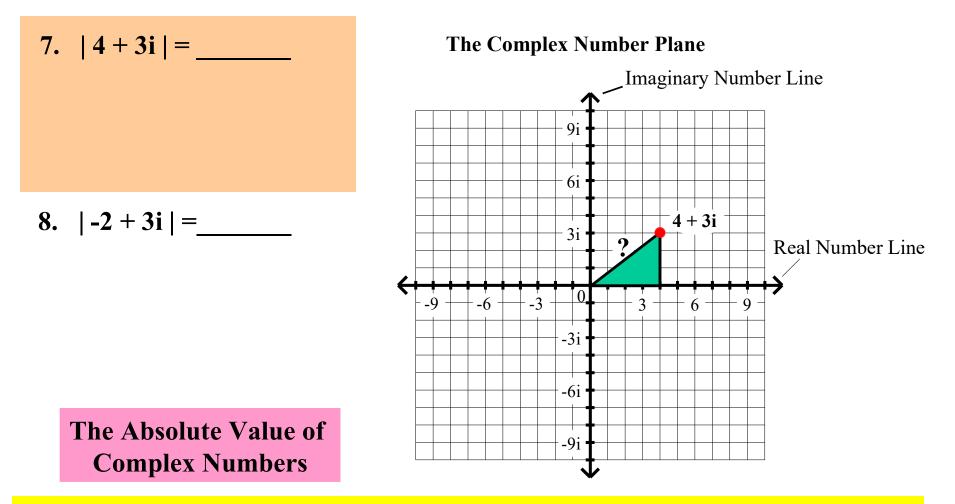
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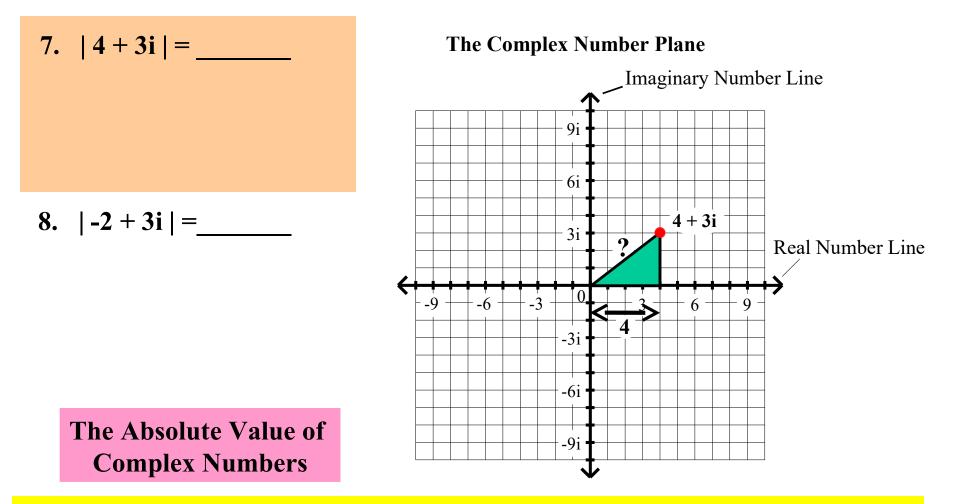


The absolute value of the complex number 4 + 3i is the distance this number is from zero. This is equal to the length of the hypotenuse of the right triangle shown.

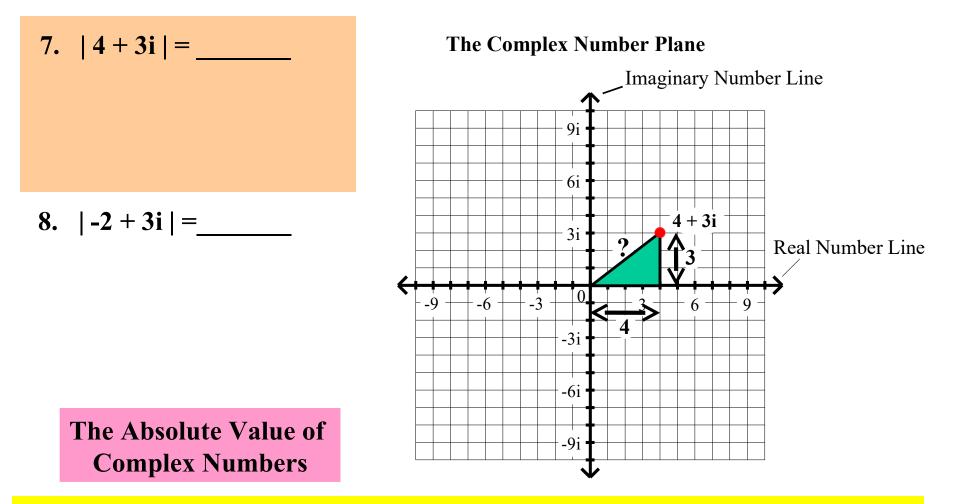
Find the indicated absolute values. Express your answers in simplest form.



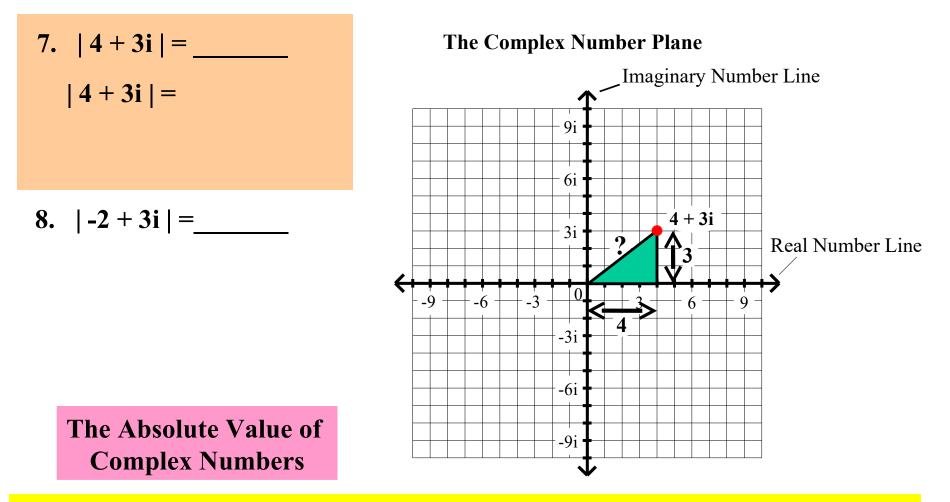
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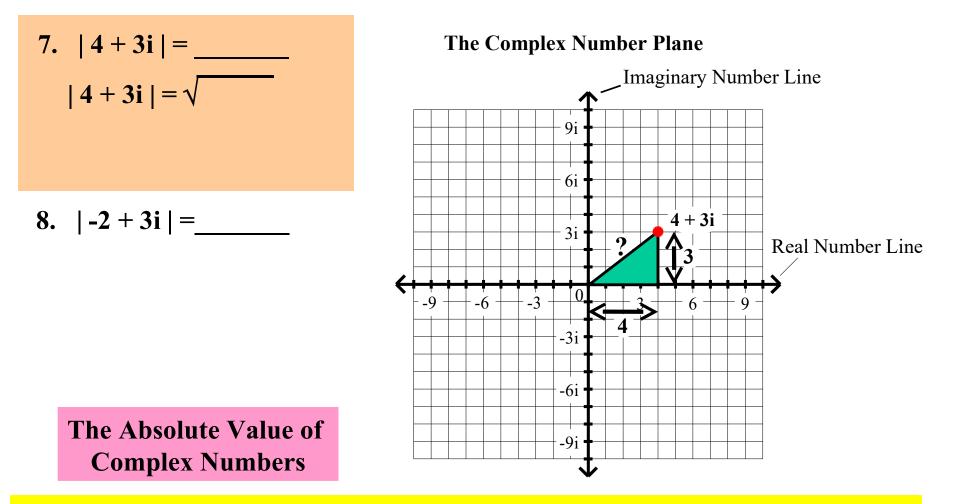
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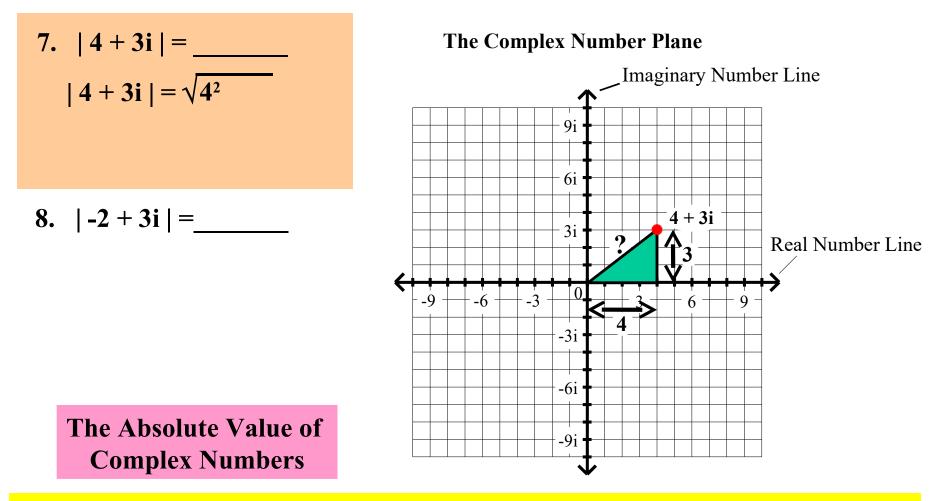
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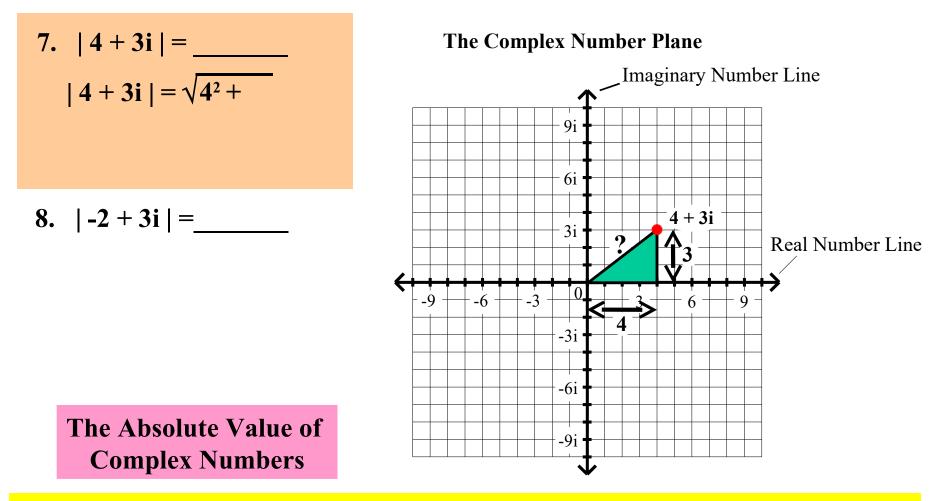
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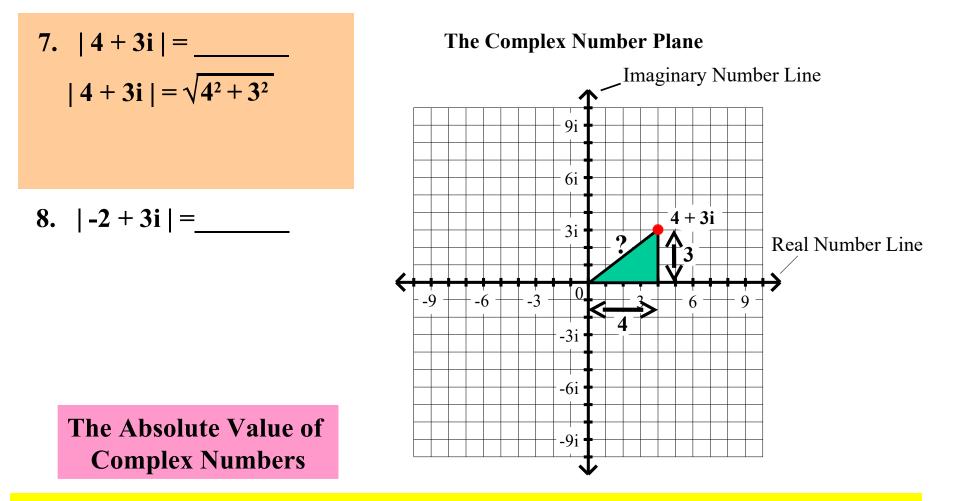
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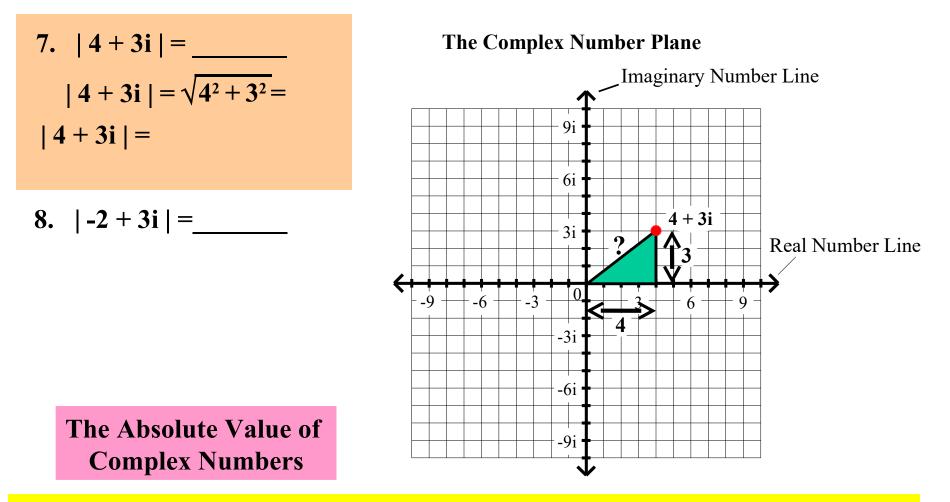
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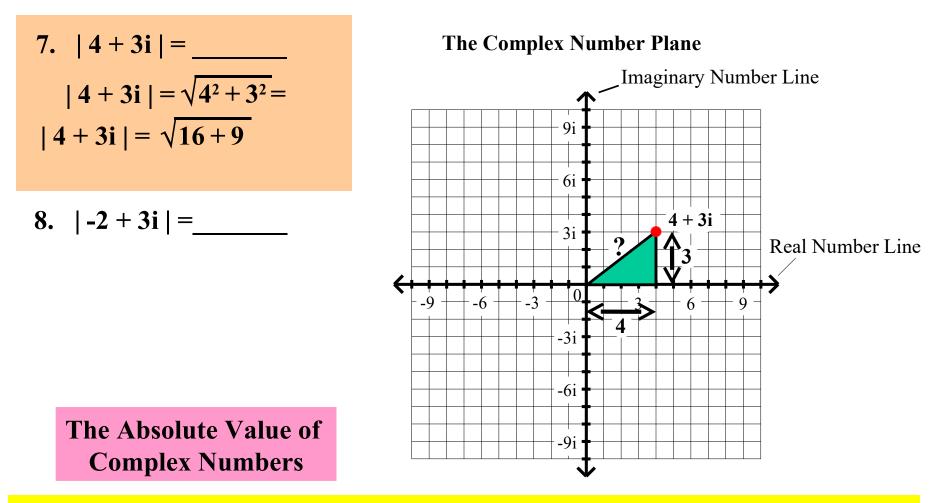
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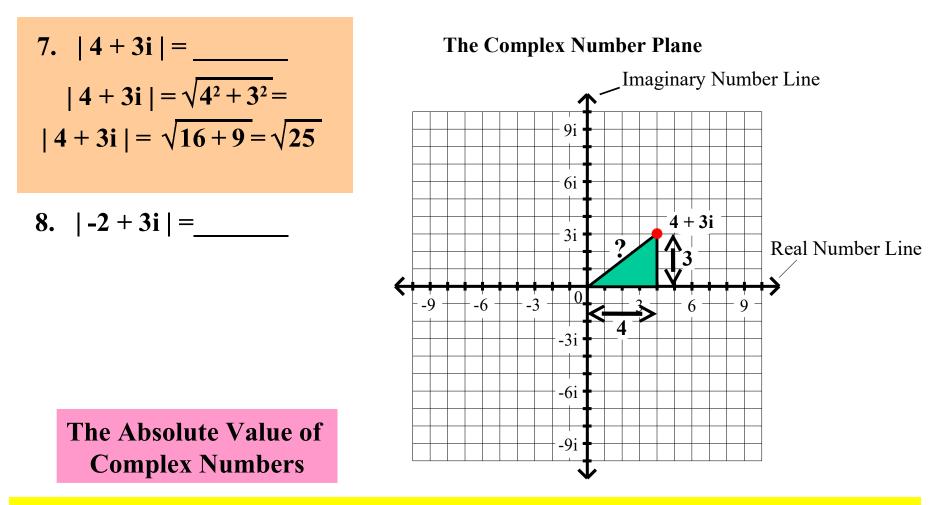
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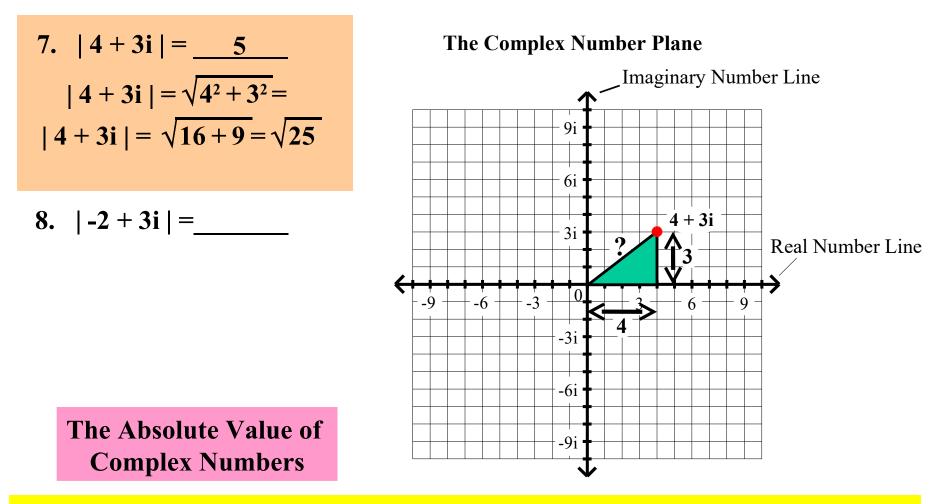
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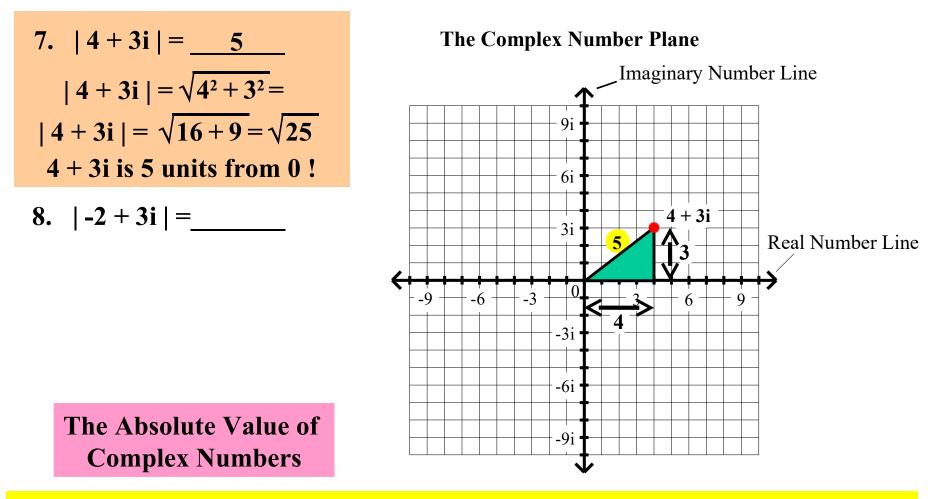
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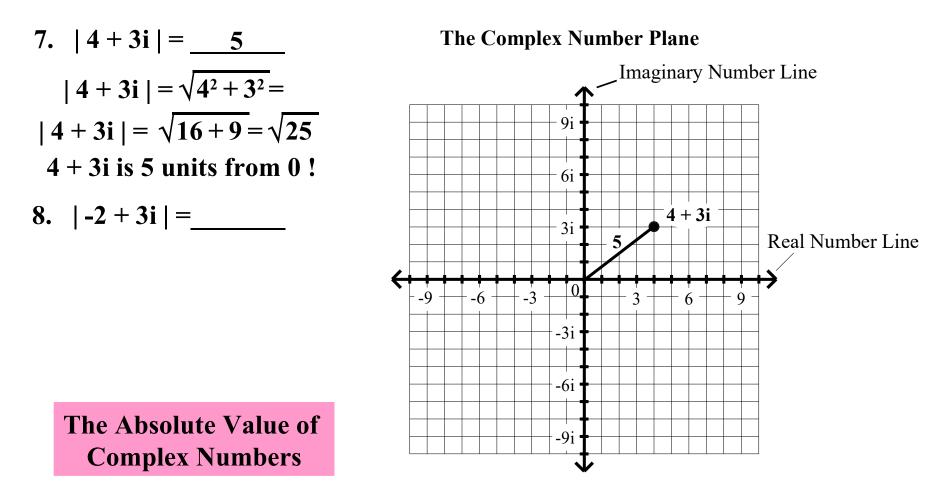


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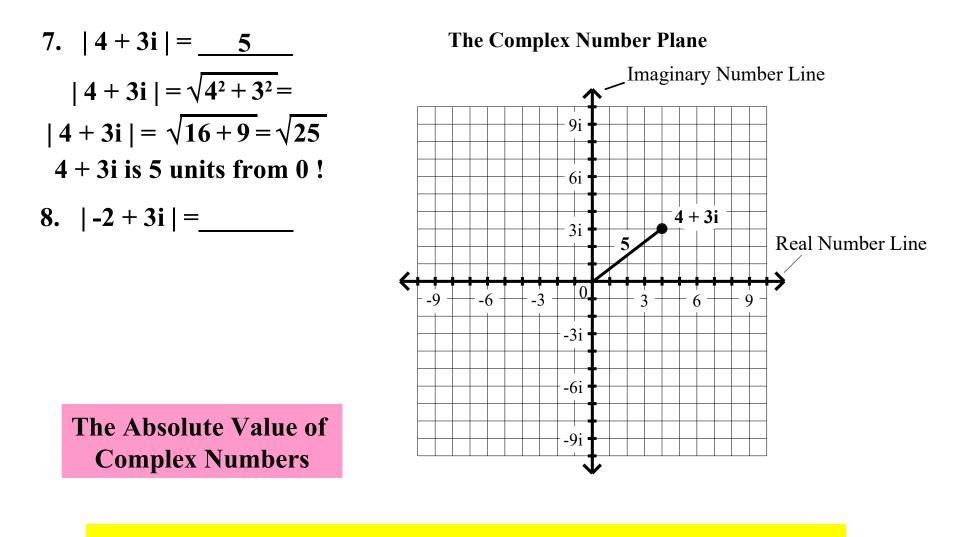


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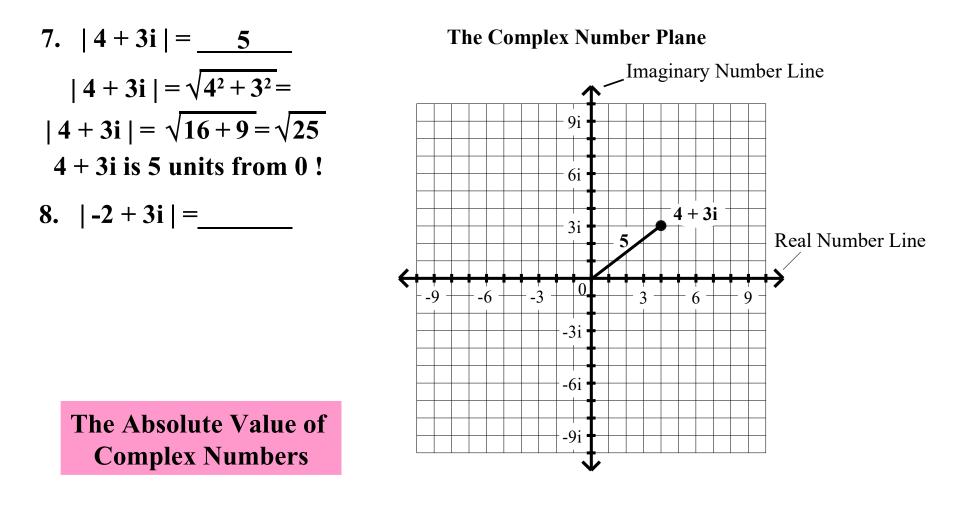


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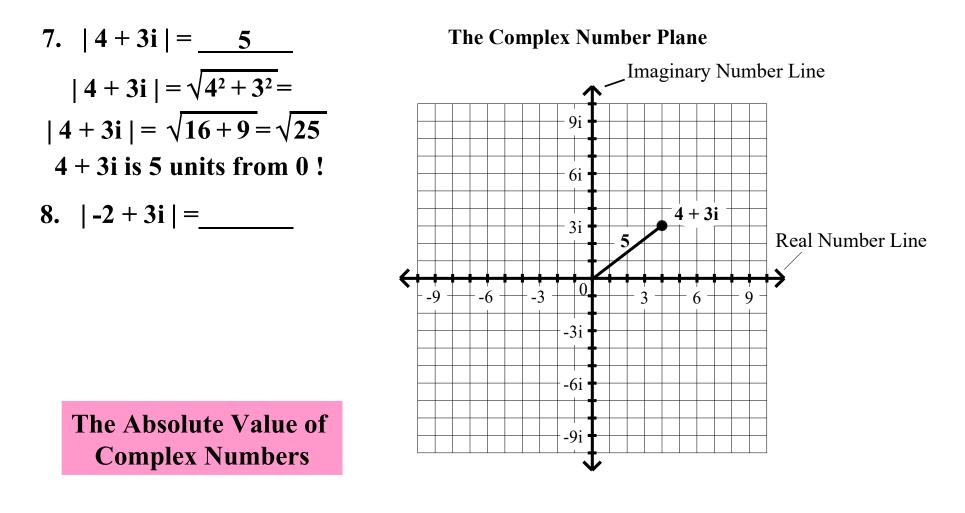
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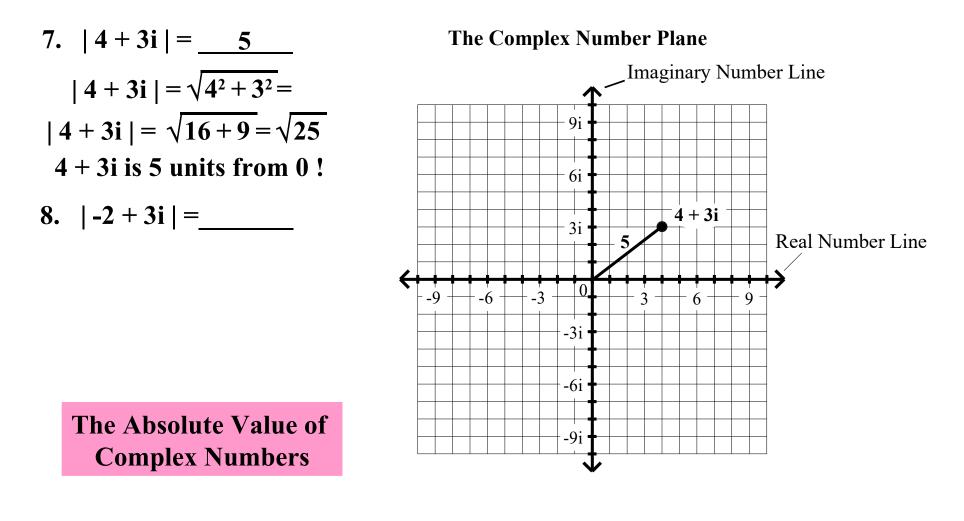
Notice that $|4 + 3i| = \sqrt{4^2 + 3^2}$.

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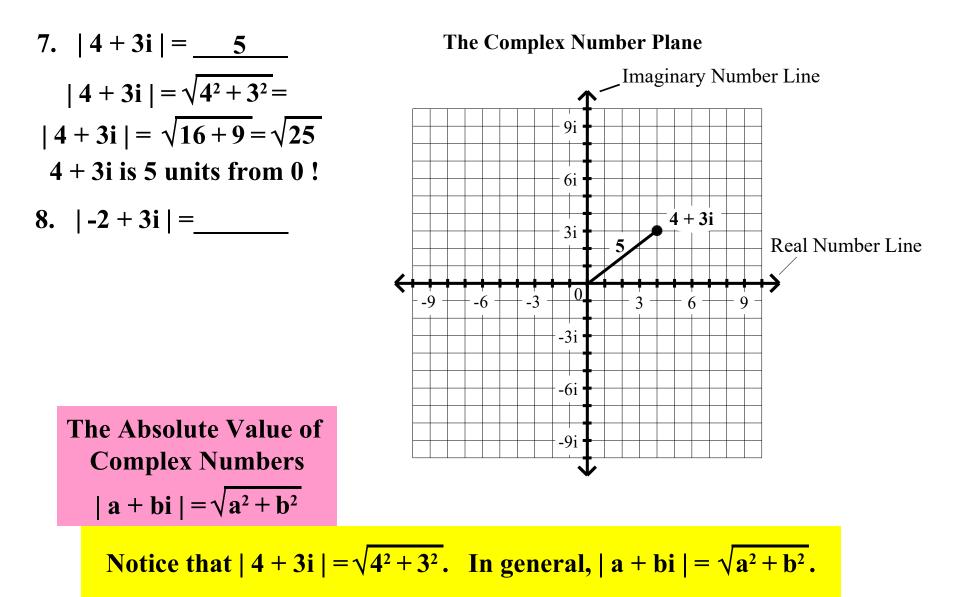


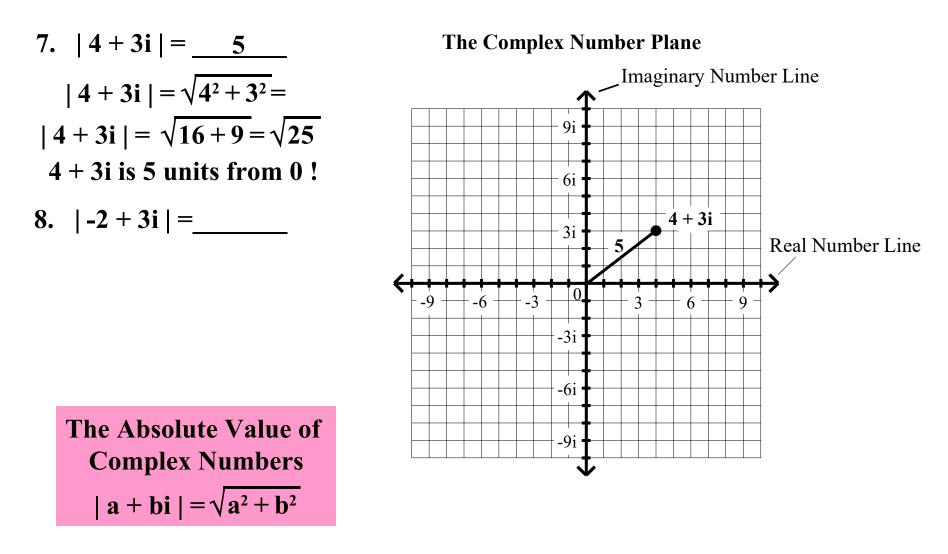
Notice that $|4 + 3i| = \sqrt{4^2 + 3^2}$. In general, |a + bi| =

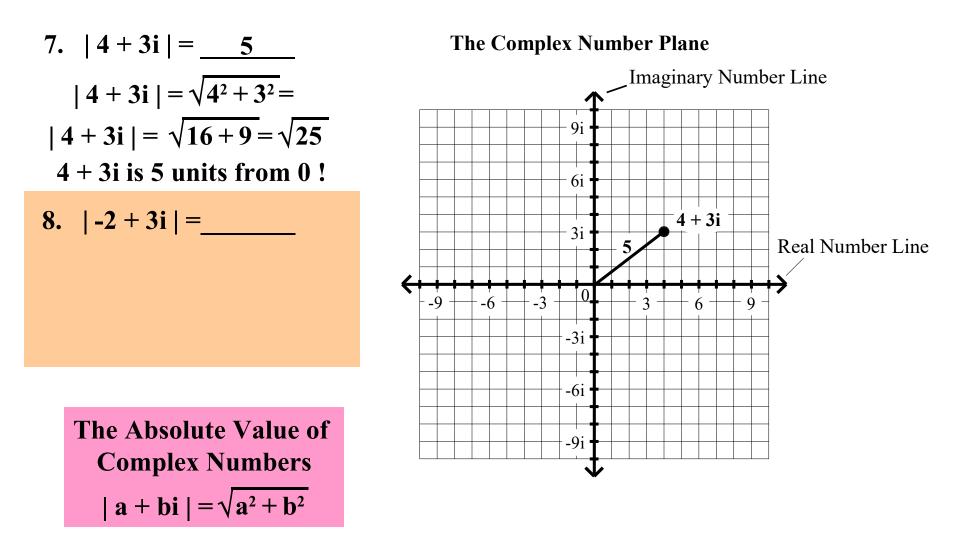
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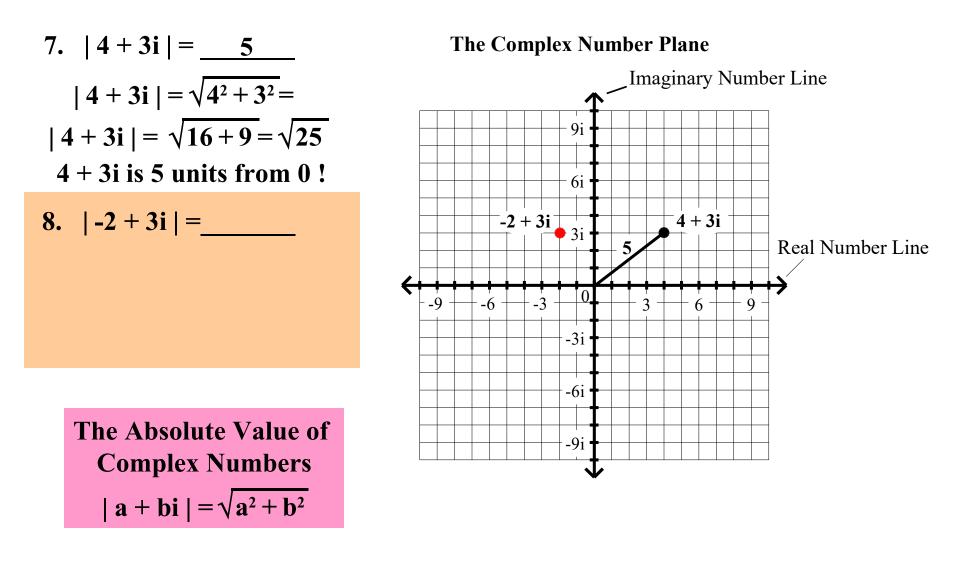


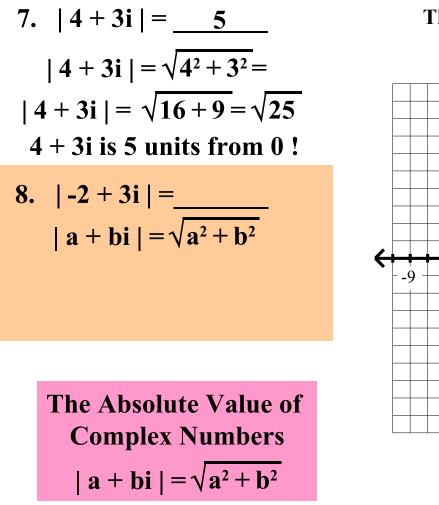
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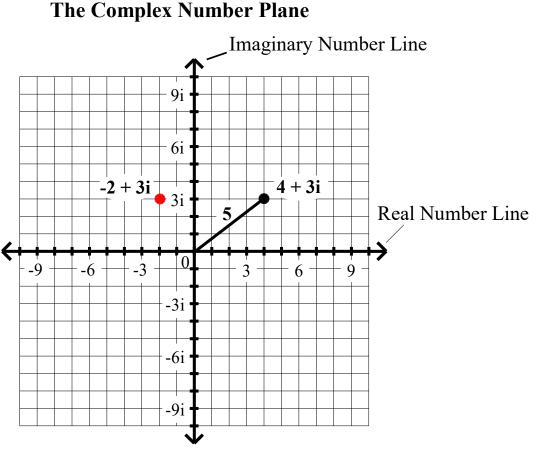






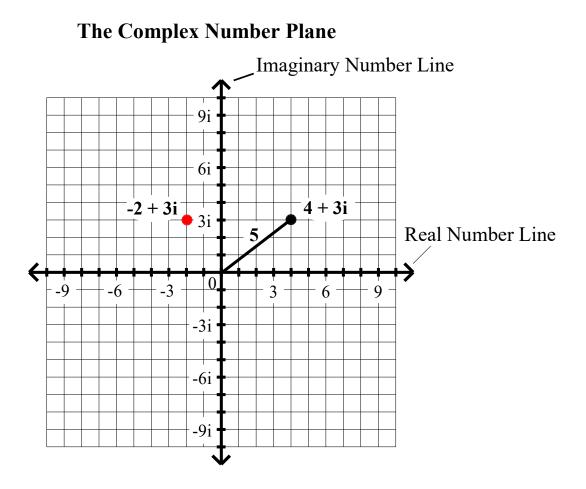






7.
$$|4+3i| = 5$$

 $|4+3i| = \sqrt{4^2 + 3^2} =$
 $|4+3i| = \sqrt{16+9} = \sqrt{25}$
 $4+3i$ is 5 units from 0 !
8. $|-2+3i| =$
 $|a+bi| = \sqrt{a^2+b^2}$
 $|-2+3i| =$



The Absolute Value of
Complex Numbers
$$| a + bi | = \sqrt{a^2 + b^2}$$

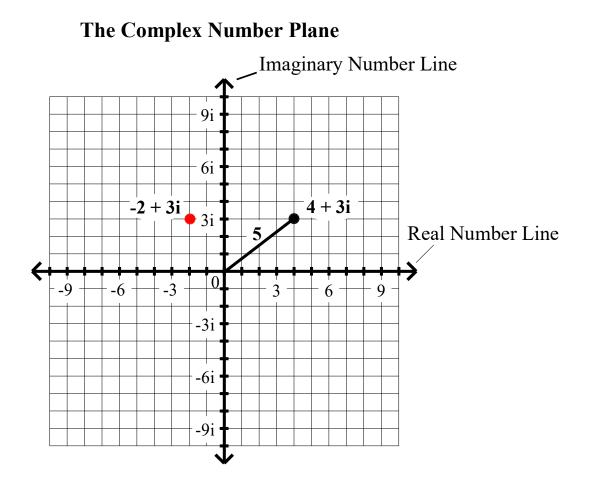
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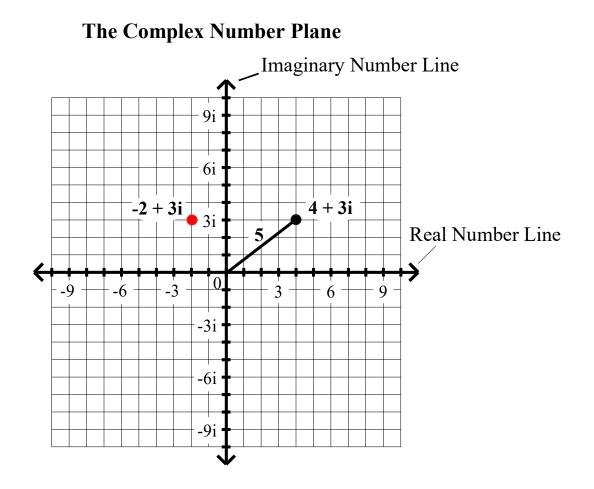
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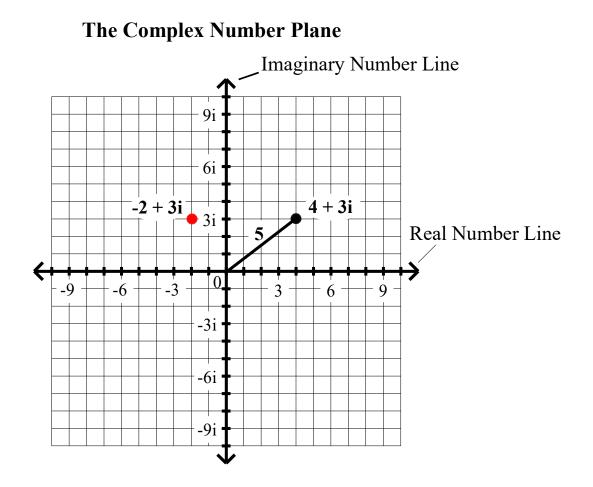
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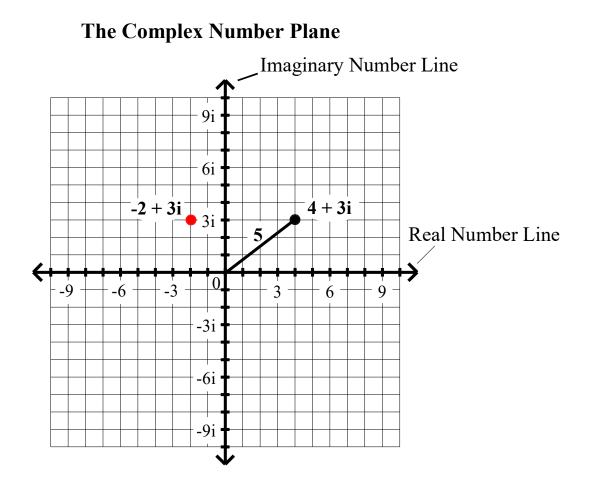
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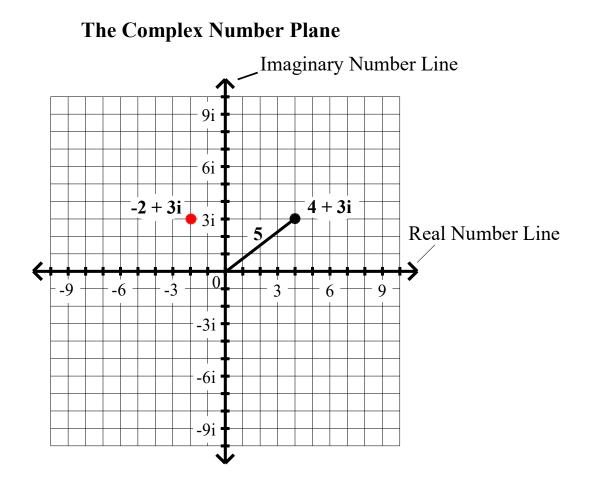
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=



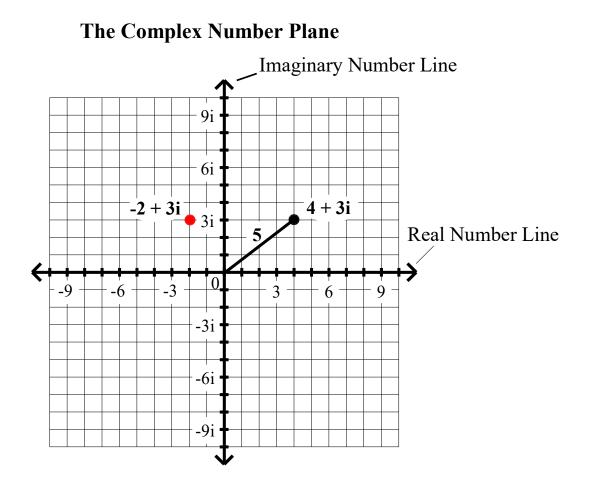
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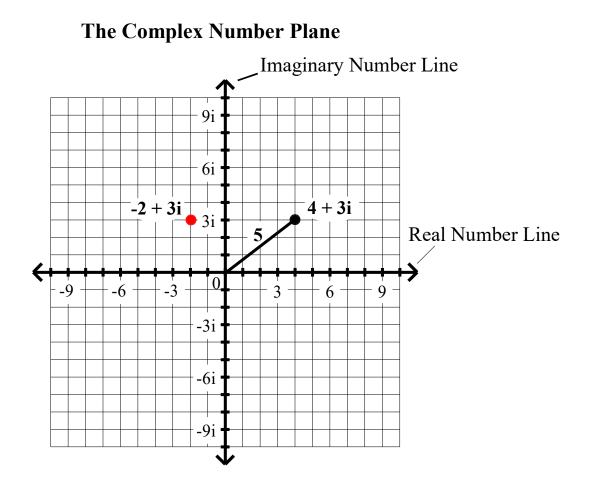
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 $|-2 + 3i| = \sqrt{(-2)^2 + 3^2} =$
 $= \sqrt{4}$



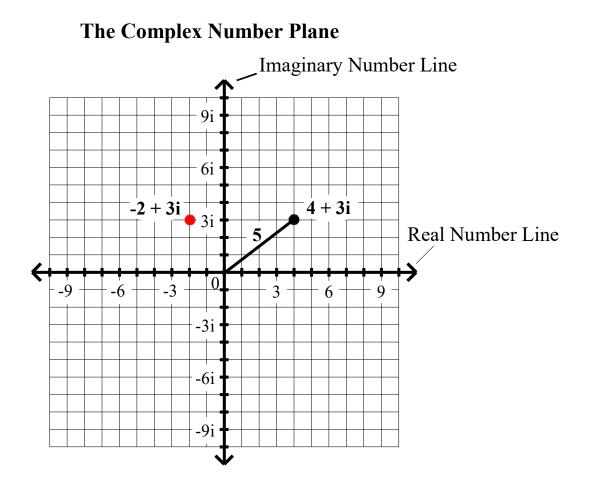
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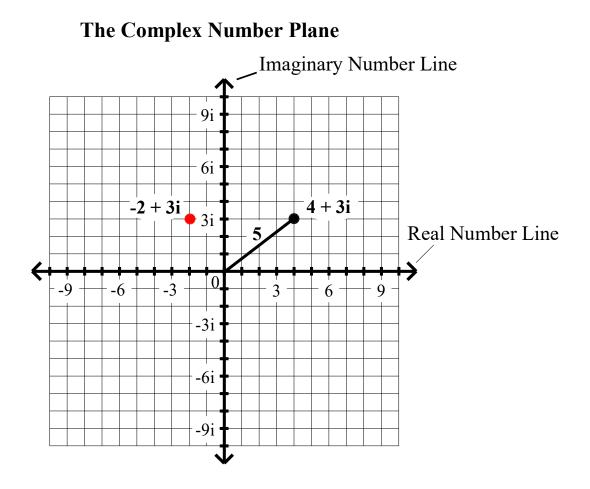
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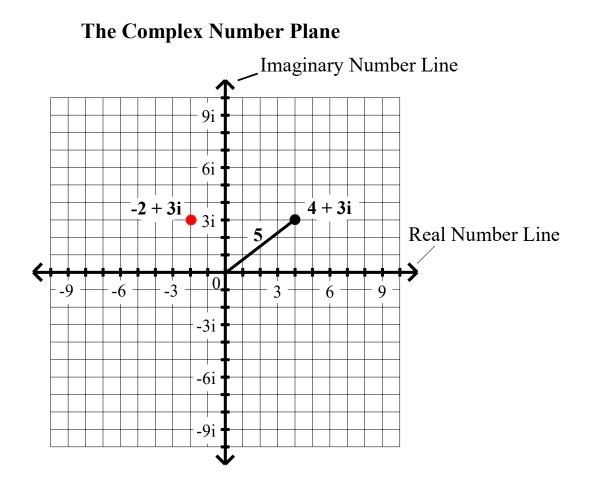
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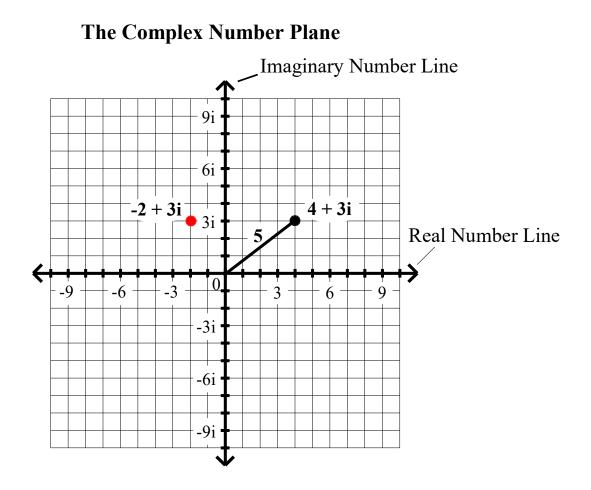
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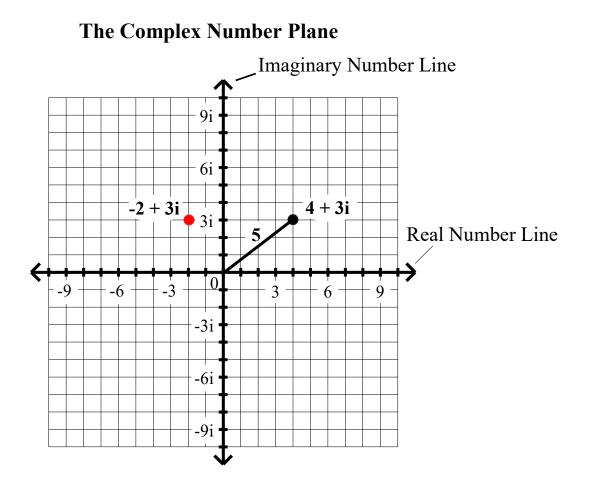


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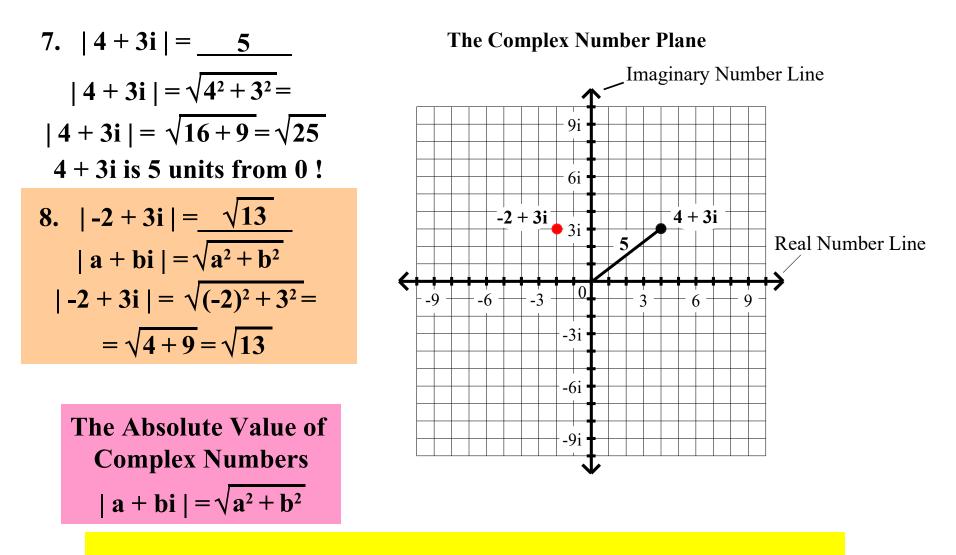
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The Absolute Value of Complex Numbers $|a + bi| = \sqrt{a^2 + b^2}$

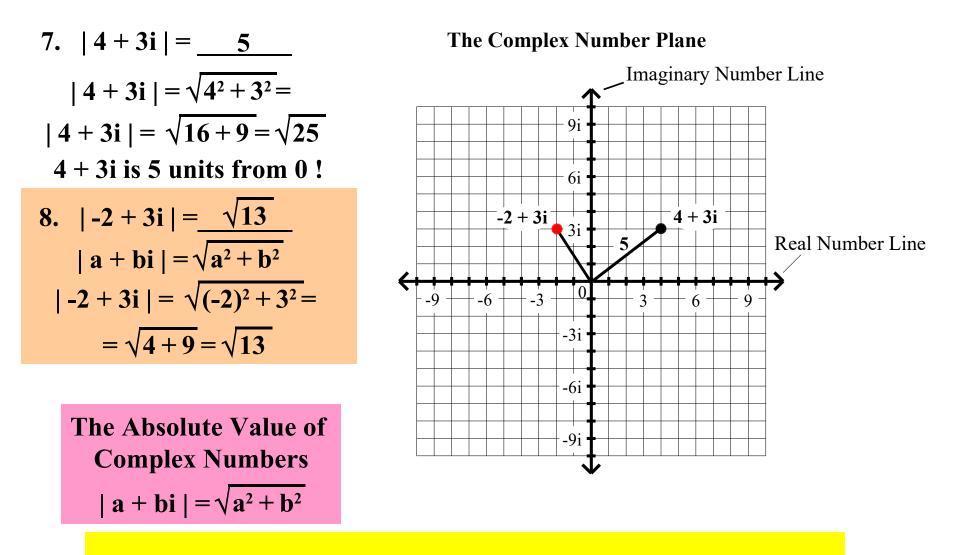


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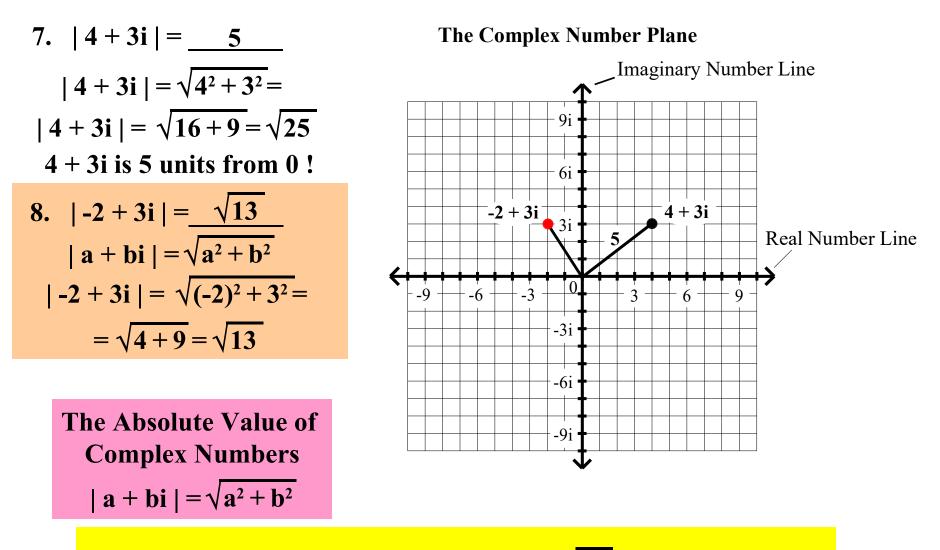
The distance from -2 + 3i to zero

Find the indicated absolute values. Express your answers in simplest form.



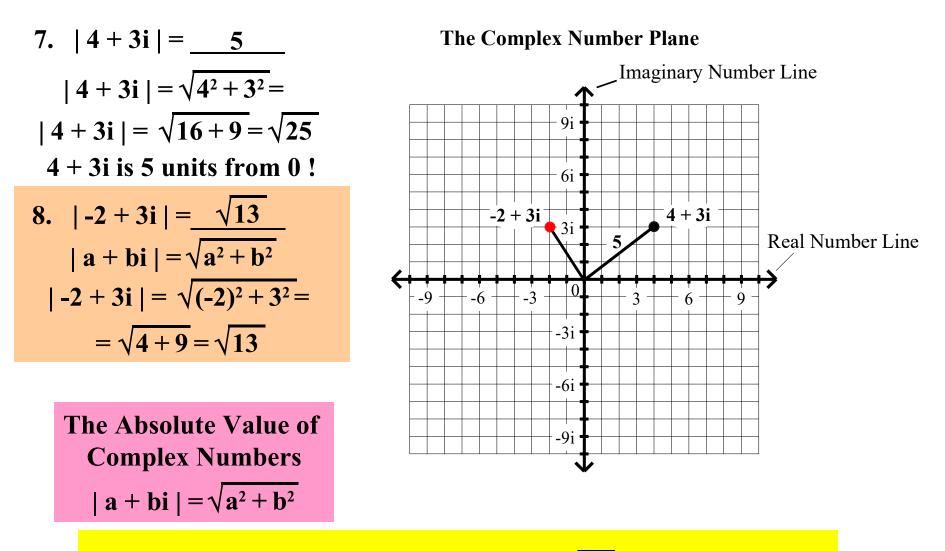
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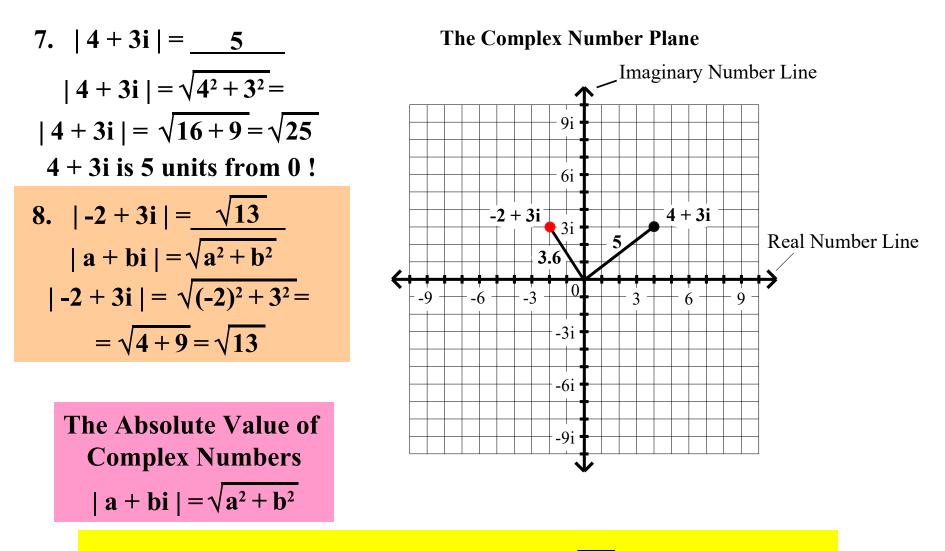
The distance from -2 + 3i to zero is $\sqrt{13}$

Find the indicated absolute values. Express your answers in simplest form.



The distance from -2 + 3i to zero is $\sqrt{13} \approx 3.6$ units.

Find the indicated absolute values. Express your answers in simplest form.



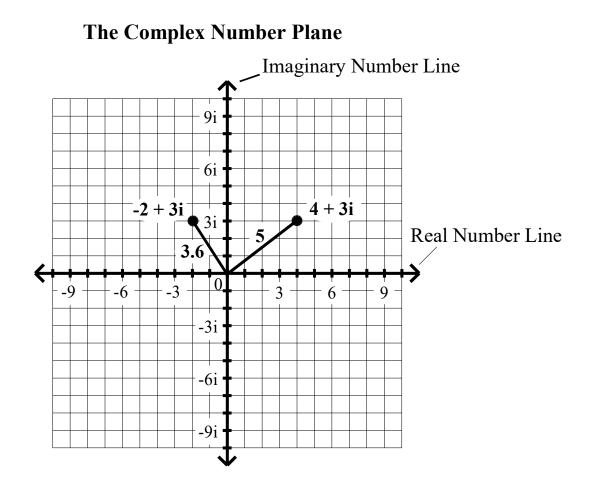
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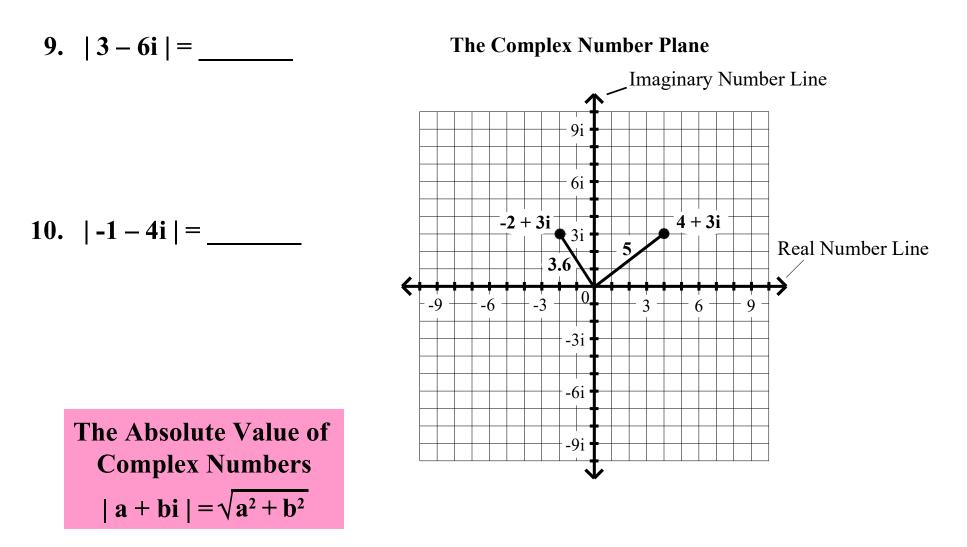
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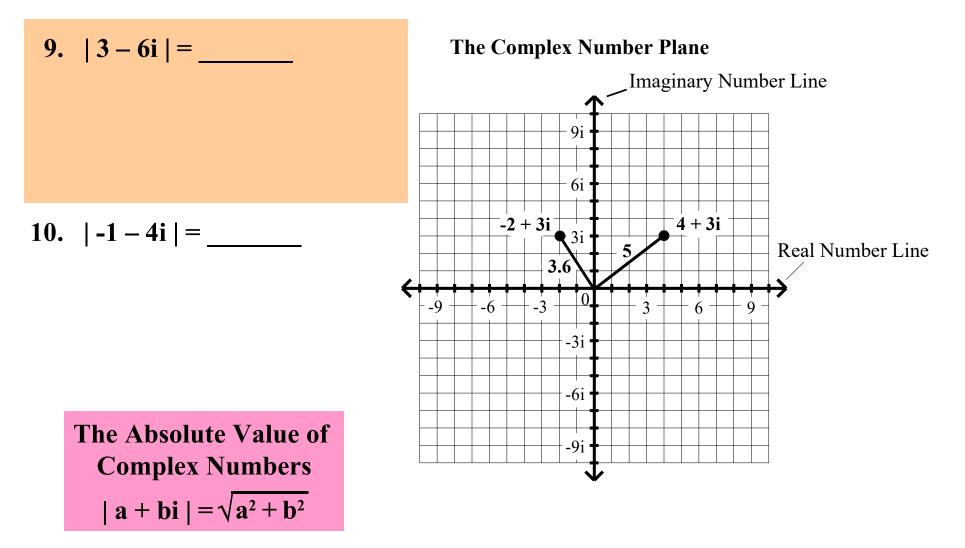
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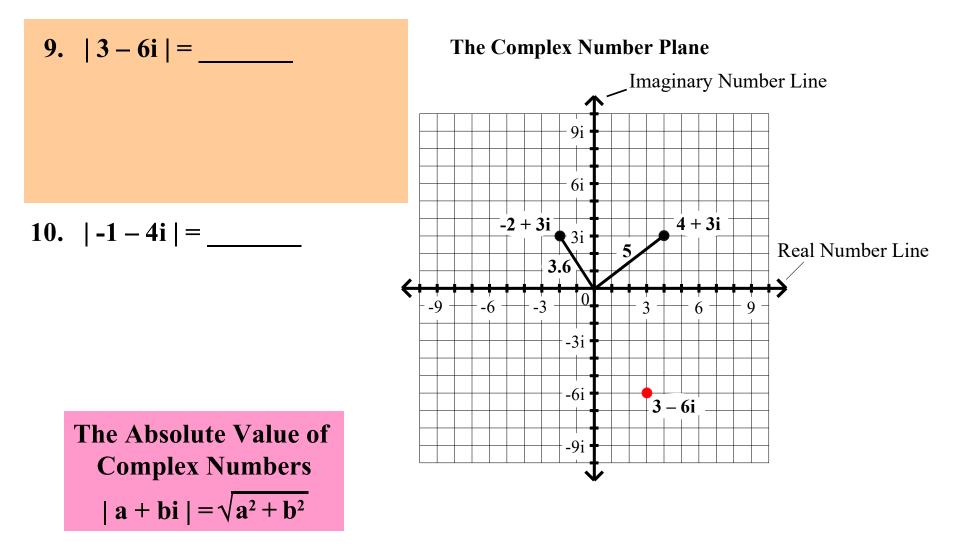
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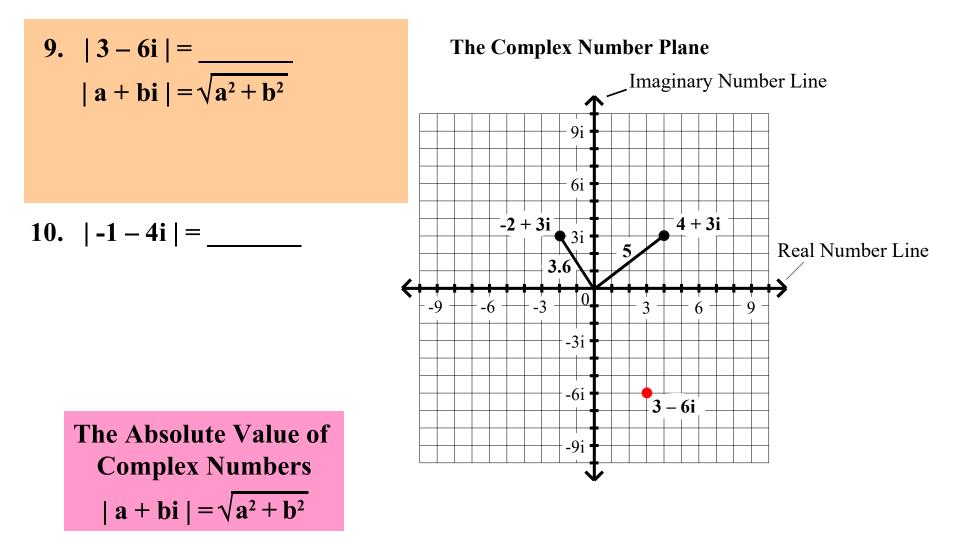
The Absolute Value of Complex Numbers $| a + bi | = \sqrt{a^2 + b^2}$

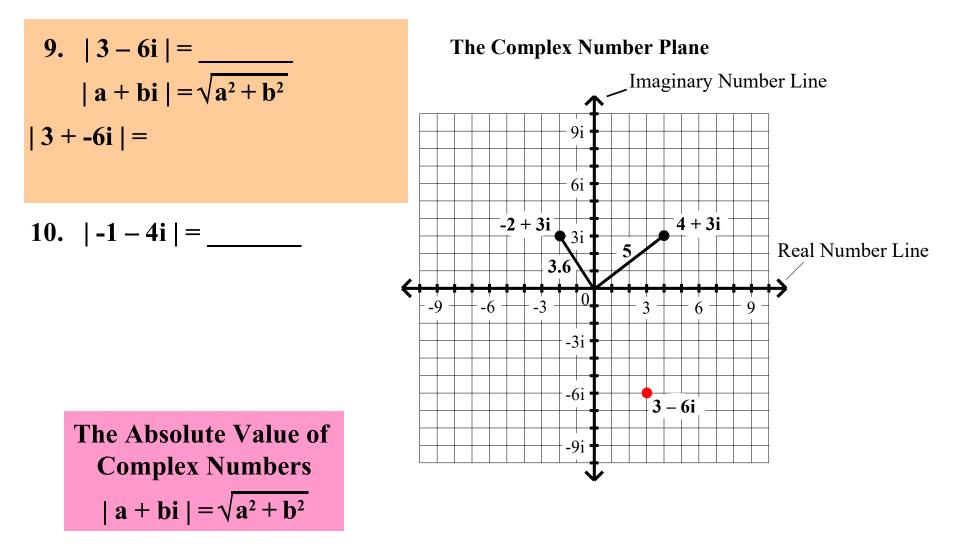












Find the indicated absolute values. Express your answers in simplest form.

9. |3-6i| = $|a+bi| = \sqrt{a^2+b^2}$ The Complex Number Plane Imaginary Number Line $|3 + -6i| = \sqrt{}$ 9i 6i 4 + 3i -2 + 3i10. |-1-4i| =_____ 3i Real Number Line 5 3.6 0 -6 -3 _9 3 6 9 -3i -6i 3 – 6i The Absolute Value of -9i **Complex Numbers** $|a + bi| = \sqrt{a^2 + b^2}$

Find the indicated absolute values. Express your answers in simplest form.

9. |3-6i| = $|a+bi| = \sqrt{a^2+b^2}$ The Complex Number Plane Imaginary Number Line $|3 + -6i| = \sqrt{3^2}$ 9i 6i 4 + 3i -2 + 3i10. |-1-4i| =_____ 3i Real Number Line 5 3.6 0 -6 -3 _9 3 6 9 -3i -6i 3 – 6i The Absolute Value of -9i **Complex Numbers** $|a + bi| = \sqrt{a^2 + b^2}$

Find the indicated absolute values. Express your answers in simplest form.

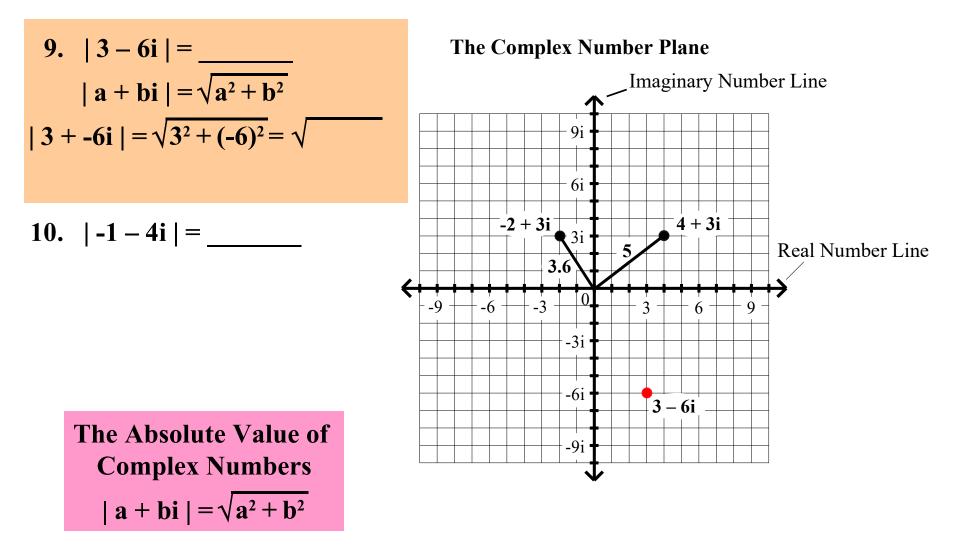
9. | 3 – 6i | = _____ **The Complex Number Plane** $|a + bi| = \sqrt{a^2 + b^2}$ $|3 + -6i| = \sqrt{3^2 + b^2}$ Imaginary Number Line 9i 6i 4 + 3i -2 + 3i10. |-1-4i| =_____ 3i Real Number Line 5 3.6 0 -6 -3 _9 3 6 9 -3i -6i 3 – 6i The Absolute Value of -9i **Complex Numbers** $|a + bi| = \sqrt{a^2 + b^2}$

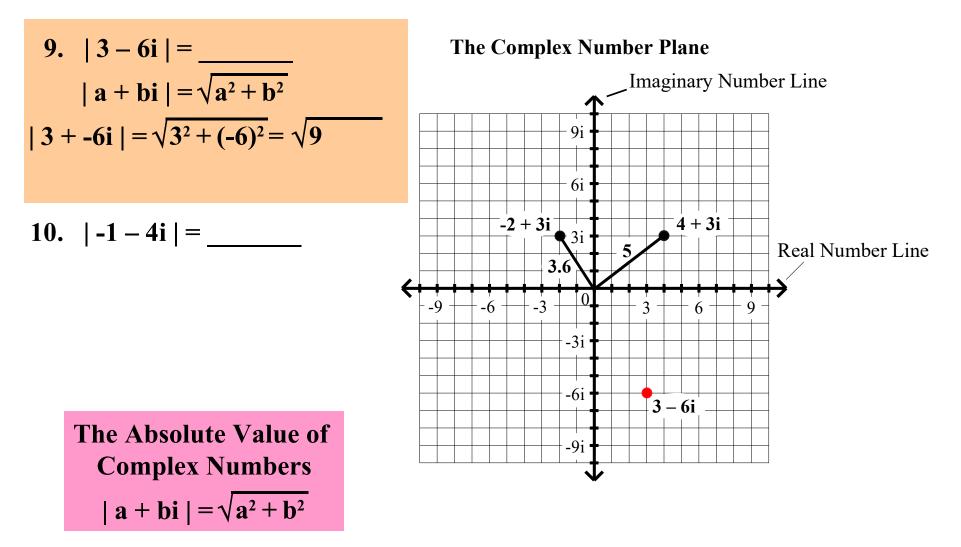
Find the indicated absolute values. Express your answers in simplest form.

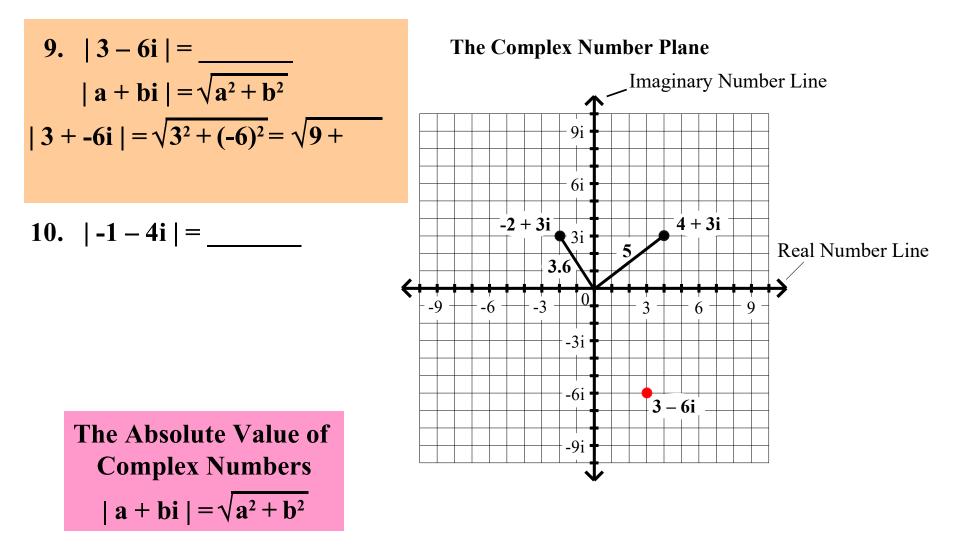
9. | 3 – 6i | = _____ **The Complex Number Plane** $|a + bi| = \sqrt{a^2 + b^2}$ $|3 + -6i| = \sqrt{3^2 + (-6)^2}$ Imaginary Number Line 9i 6i 4 + 3i -2 + 3i10. |-1-4i| =_____ 3i Real Number Line 5 3.6 0 -6 -3 _9 3 6 9 -3i -6i 3 – 6i The Absolute Value of -9i **Complex Numbers** $|a + bi| = \sqrt{a^2 + b^2}$

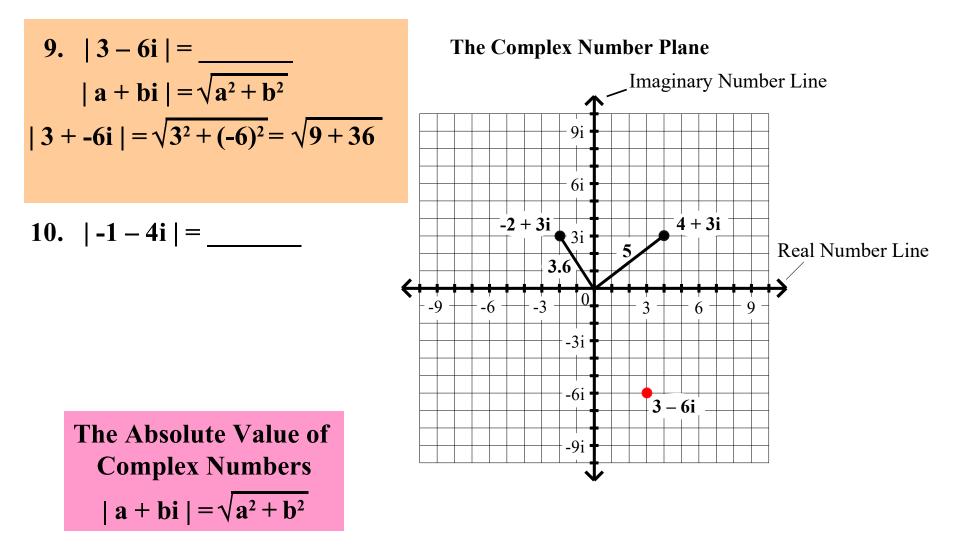
Find the indicated absolute values. Express your answers in simplest form.

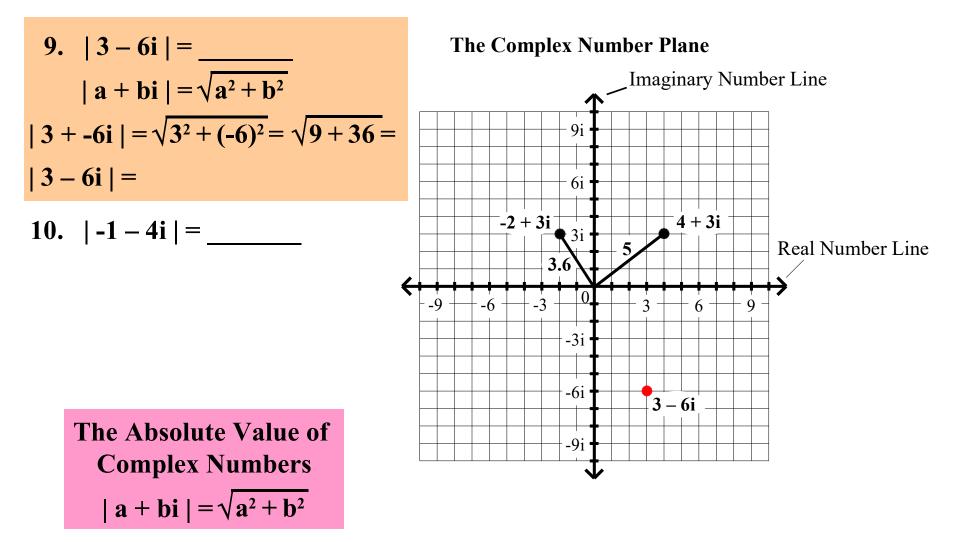
9. | 3 – 6i | = _____ **The Complex Number Plane** $|a + bi| = \sqrt{a^2 + b^2}$ $|3 + -6i| = \sqrt{3^2 + (-6)^2} =$ Imaginary Number Line 9i 6i 4 + 3i -2 + 3i10. |-1-4i| =_____ 3i Real Number Line 5 3.6 0 -6 -3 _9 3 6 9 -3i -6i 3 – 6i The Absolute Value of -9i **Complex Numbers** $|\mathbf{a} + \mathbf{b}\mathbf{i}| = \sqrt{\mathbf{a}^2 + \mathbf{b}^2}$

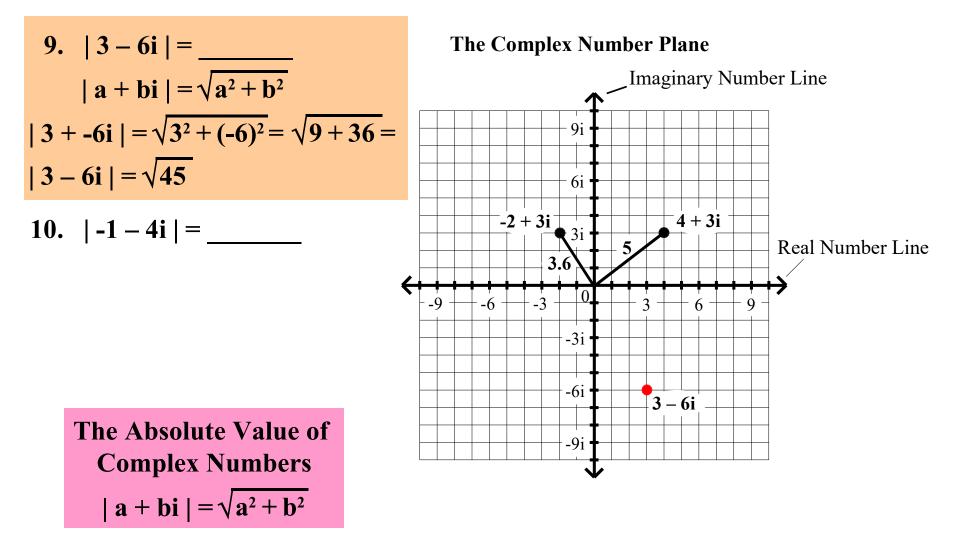


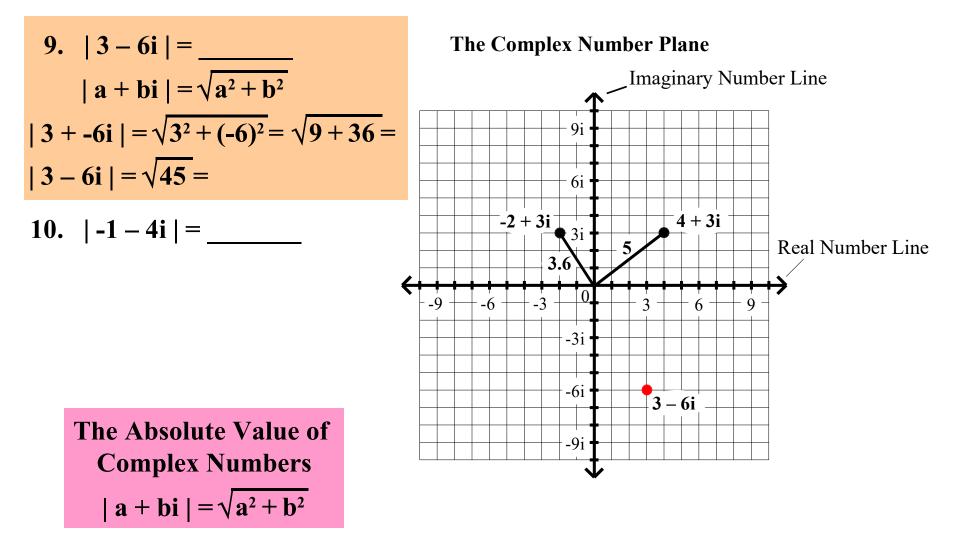


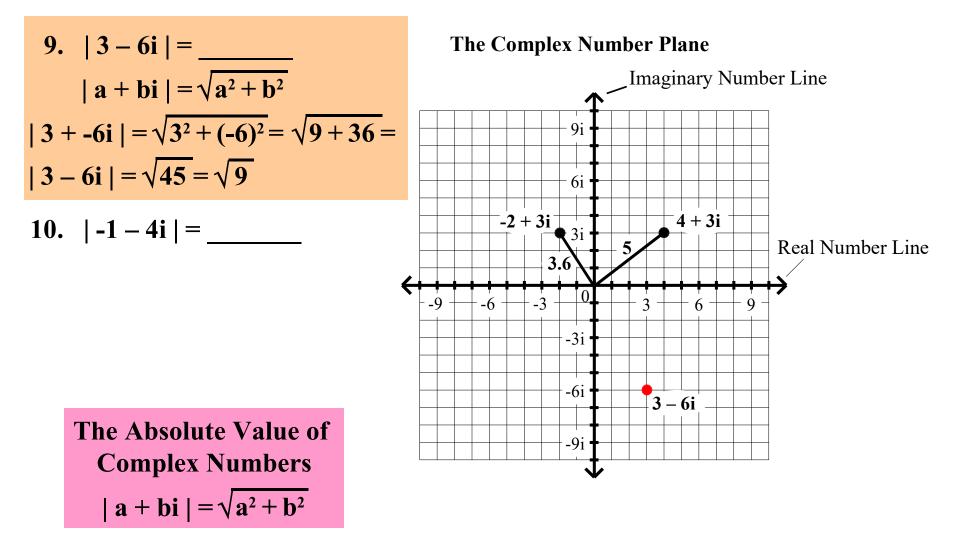


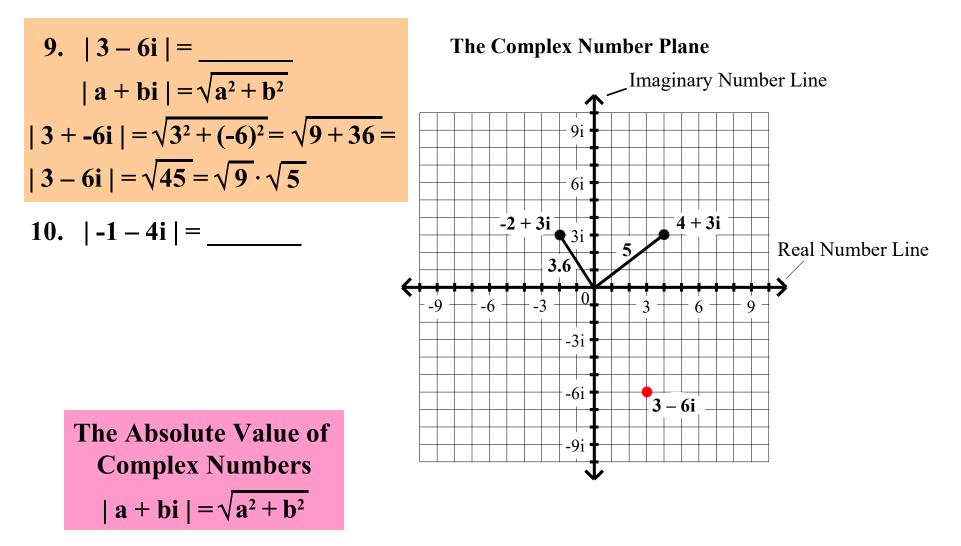


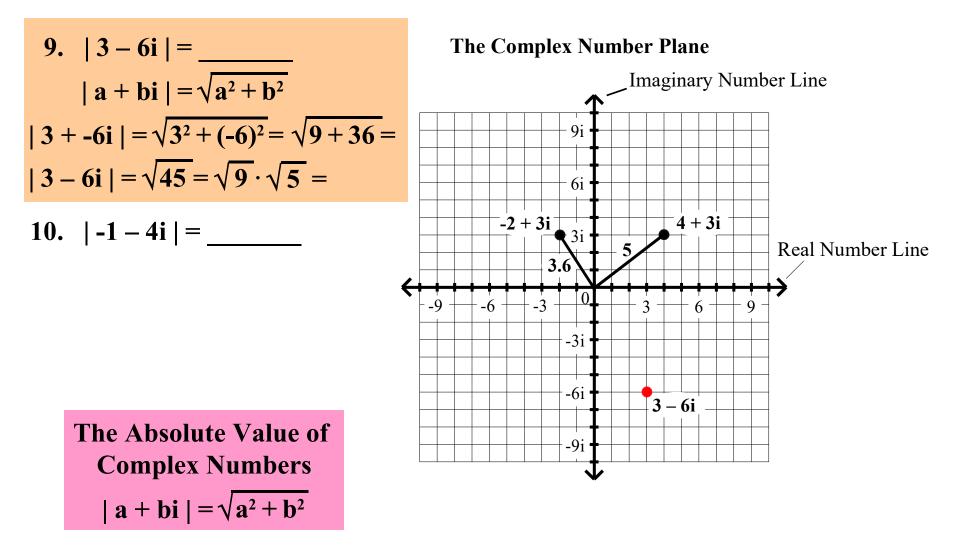


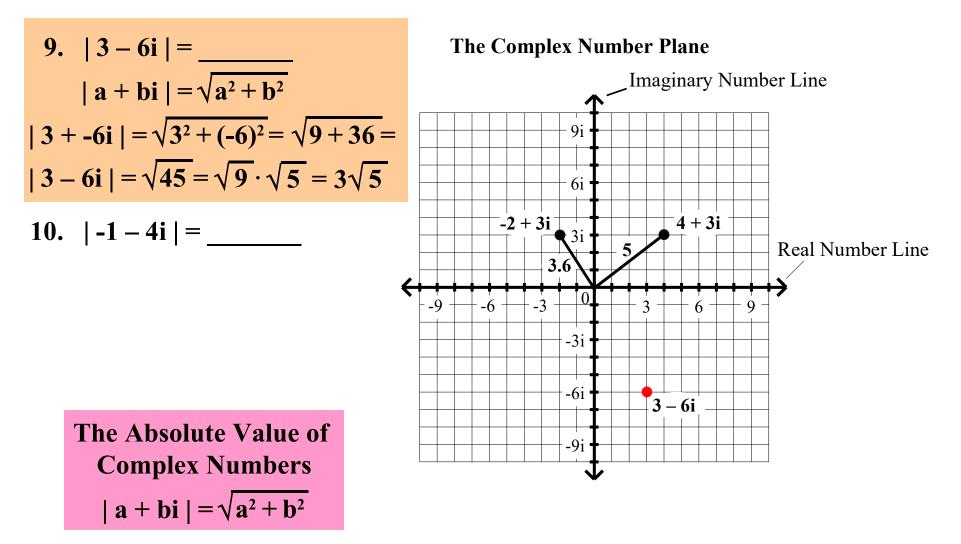


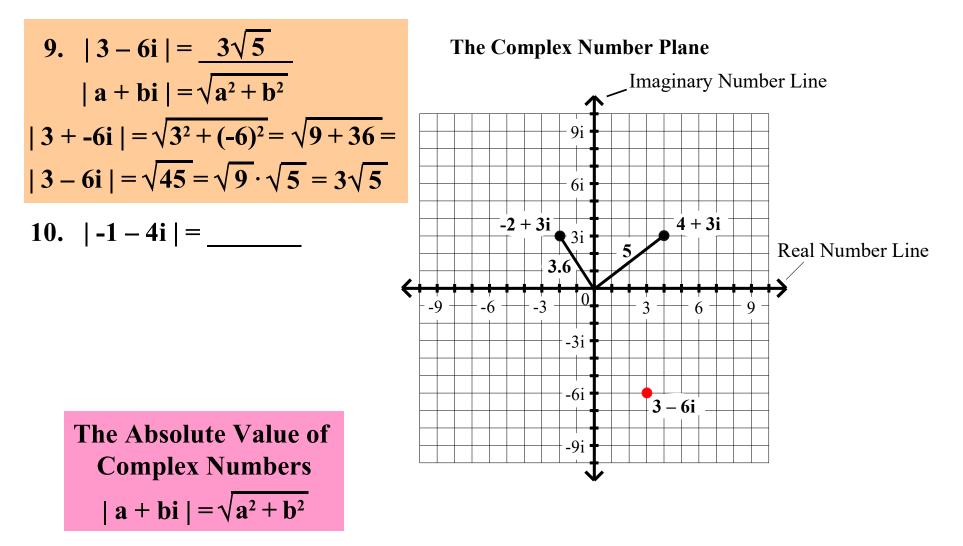




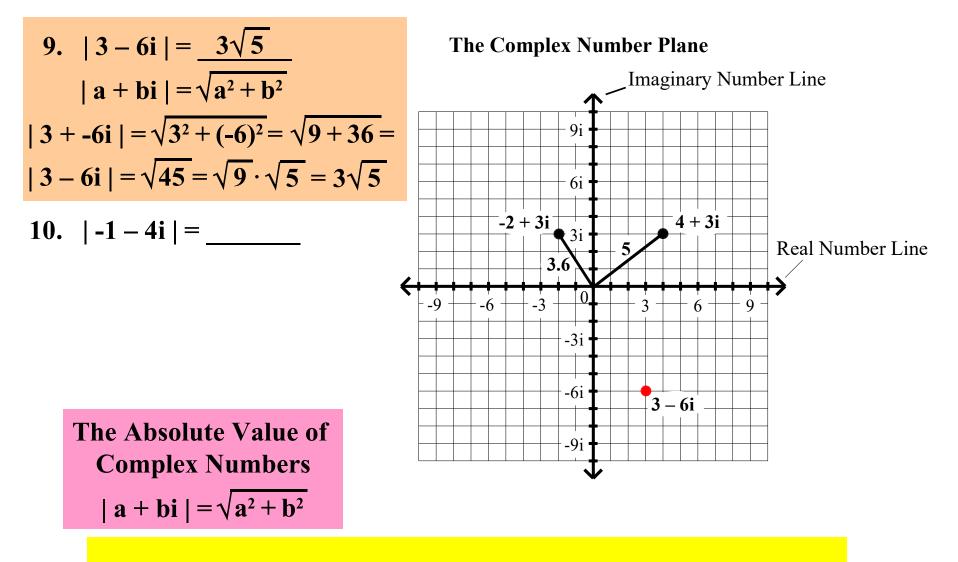






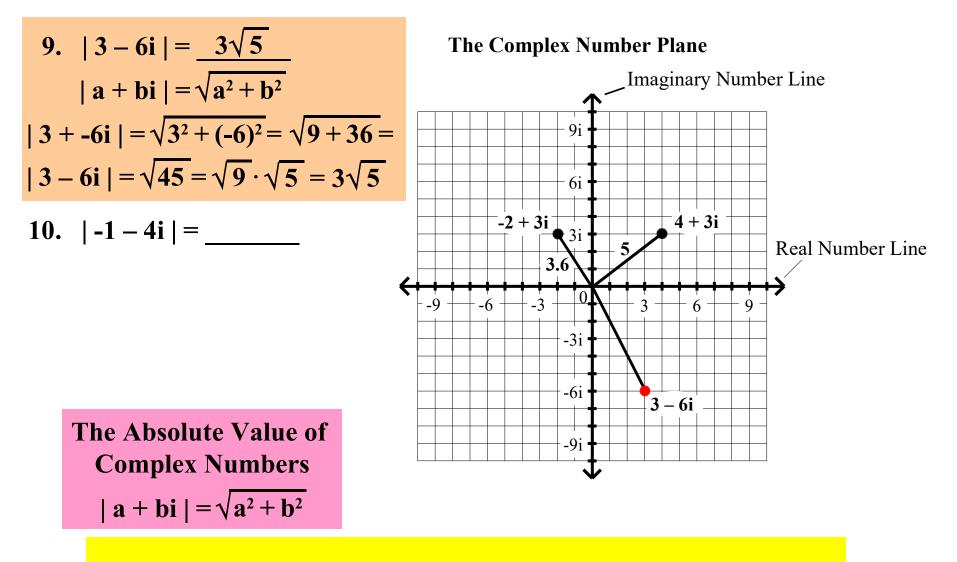


Find the indicated absolute values. Express your answers in simplest form.



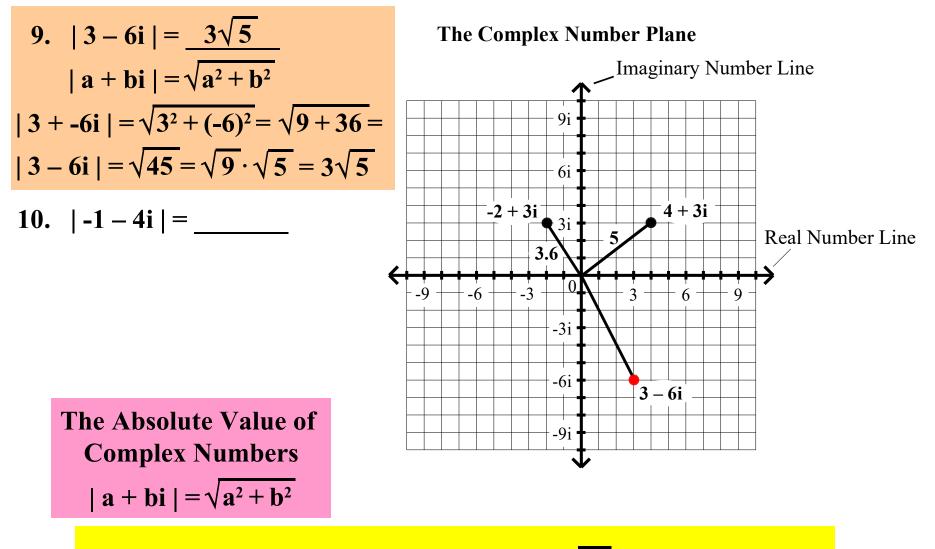
The distance from 3 – 6i to zero

Find the indicated absolute values. Express your answers in simplest form.



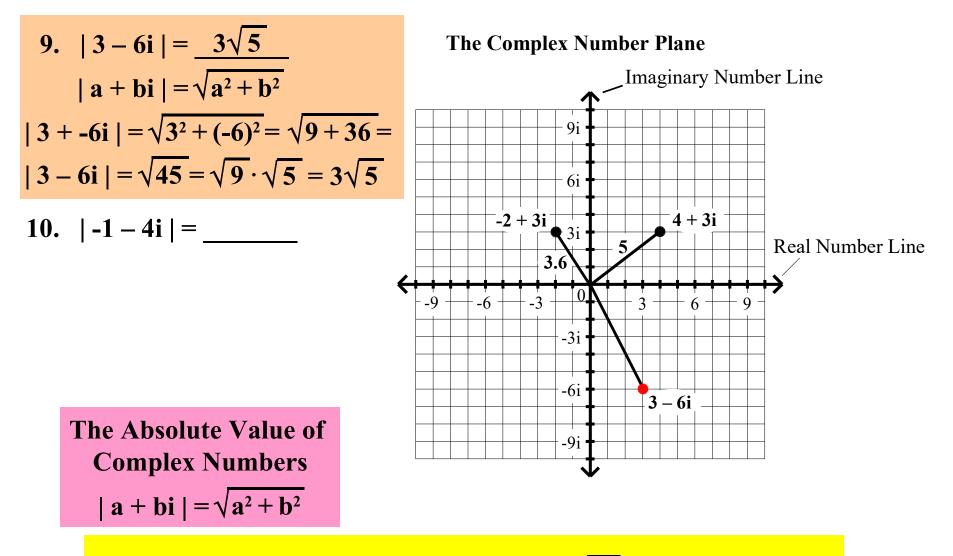
The distance from 3 – 6i to zero

Find the indicated absolute values. Express your answers in simplest form.



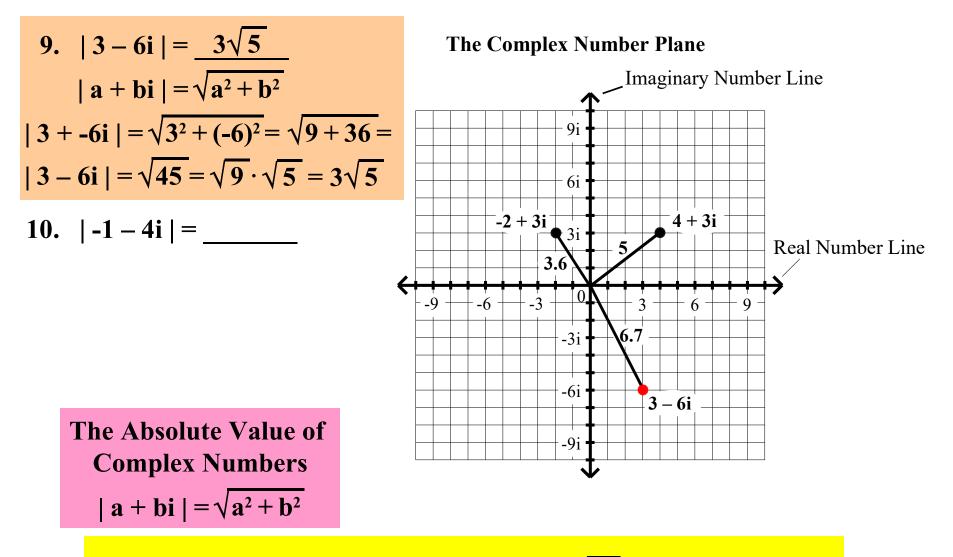
The distance from 3 – 6i to zero is $3\sqrt{5}$

Find the indicated absolute values. Express your answers in simplest form.

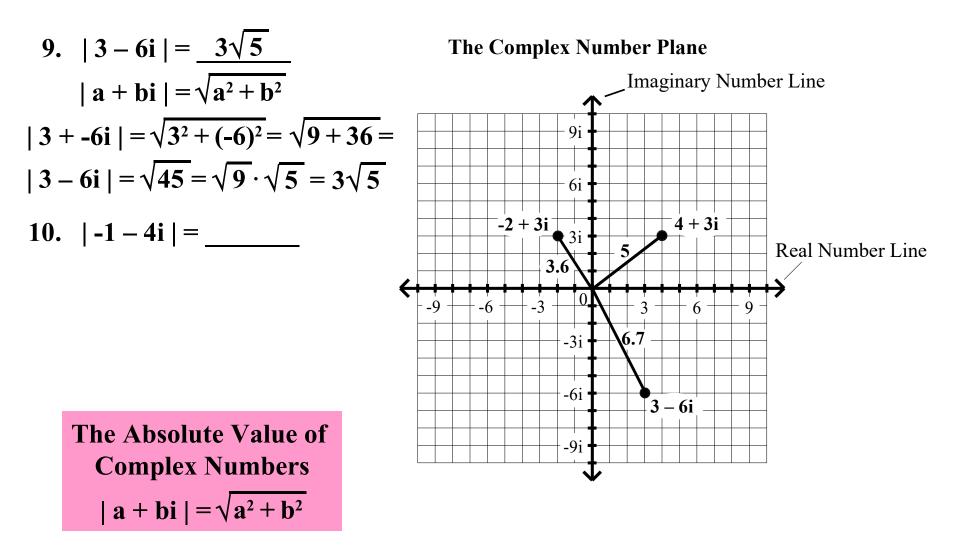


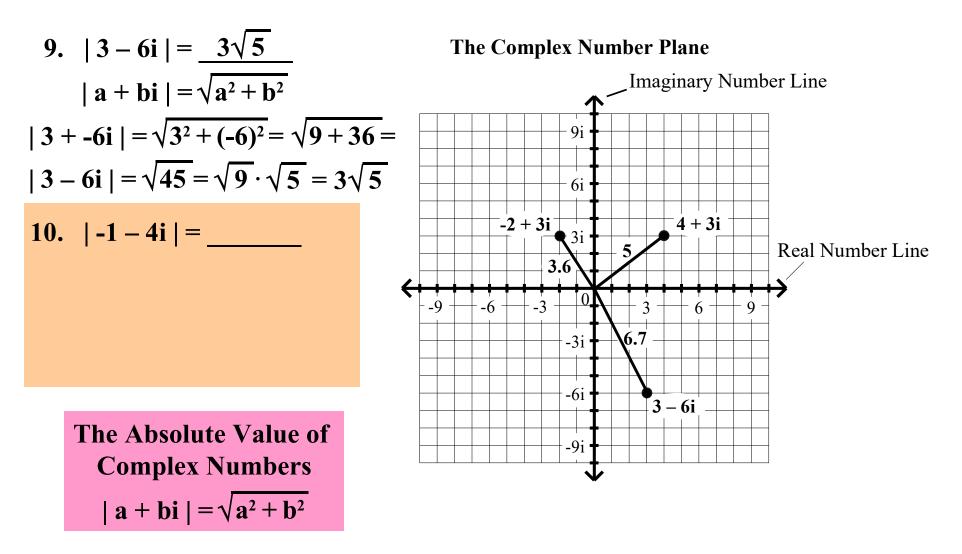
The distance from 3 – 6i to zero is $3\sqrt{5} \approx 6.7$ units.

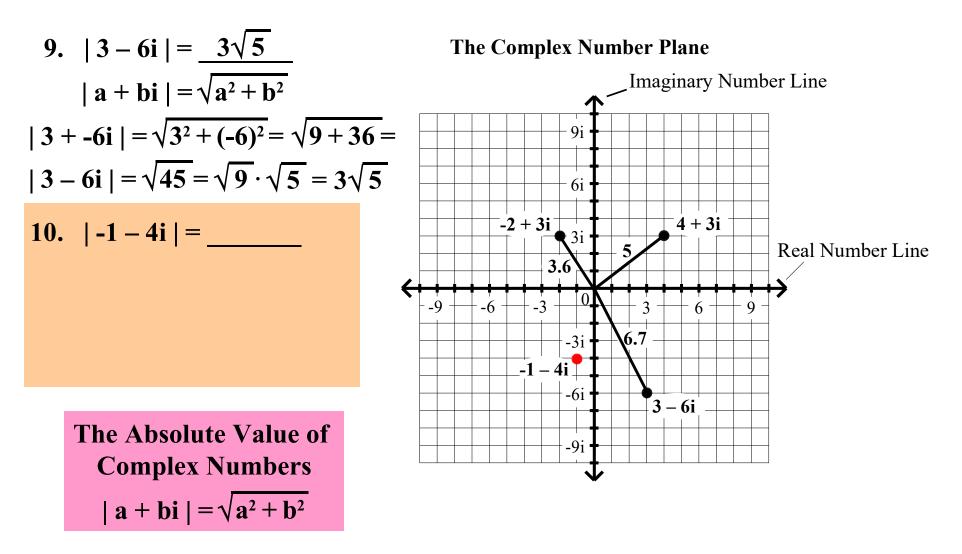
Find the indicated absolute values. Express your answers in simplest form.

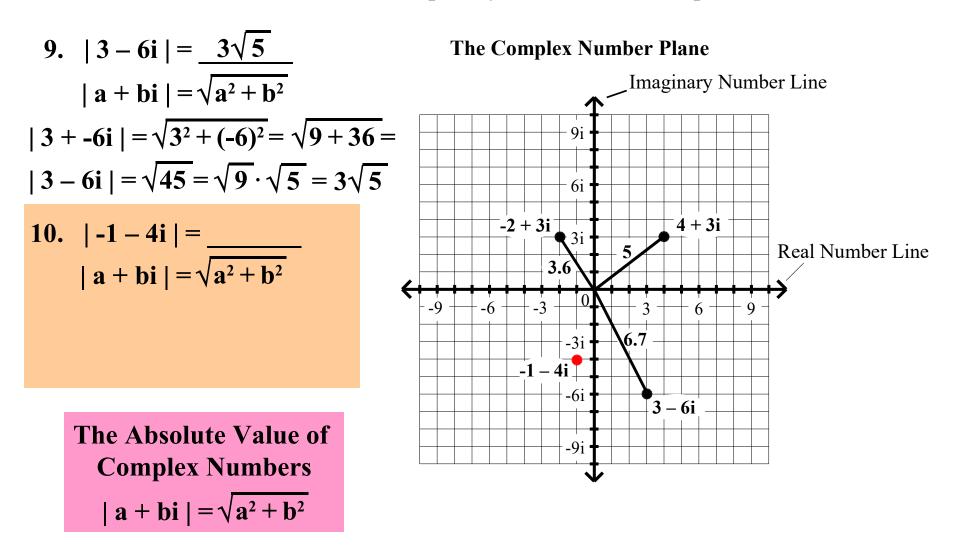


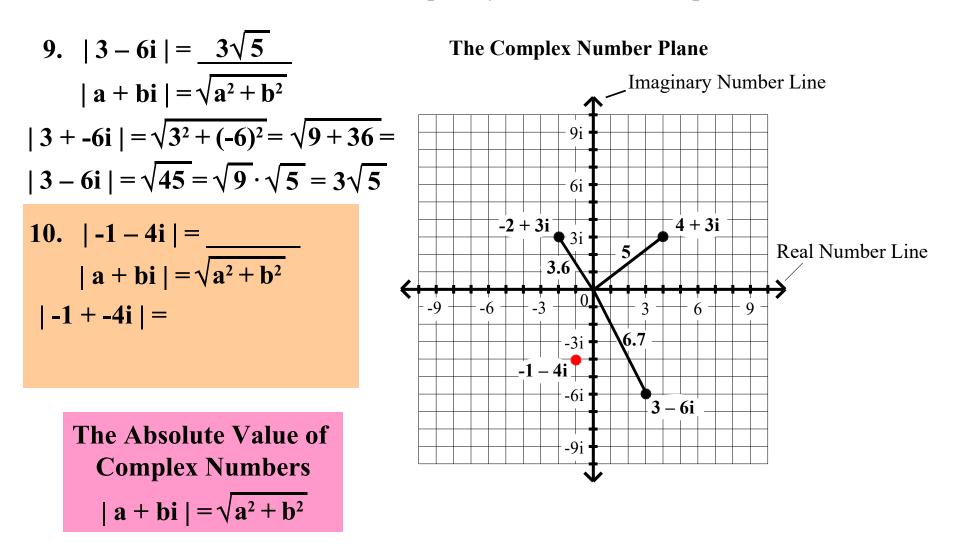
The distance from 3 – 6i to zero is $3\sqrt{5} \approx 6.7$ units.

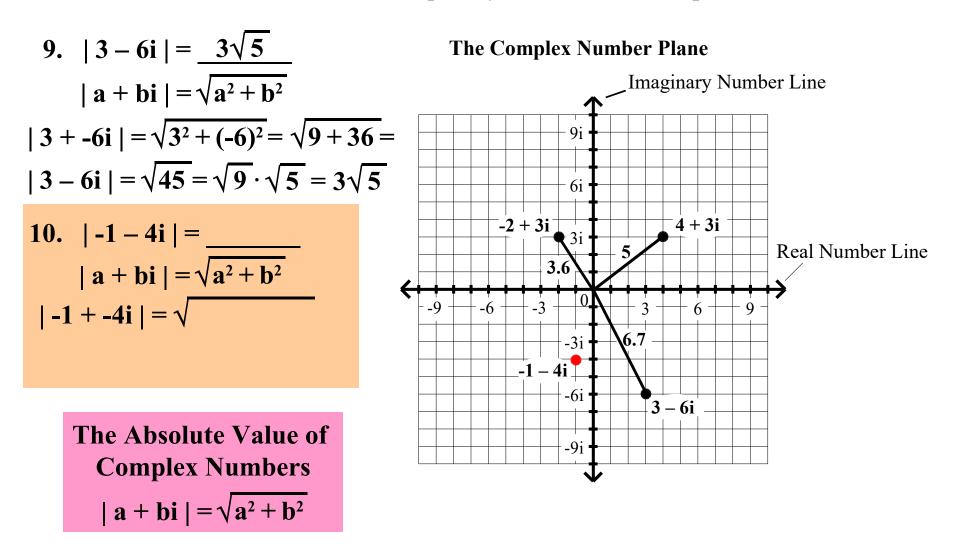


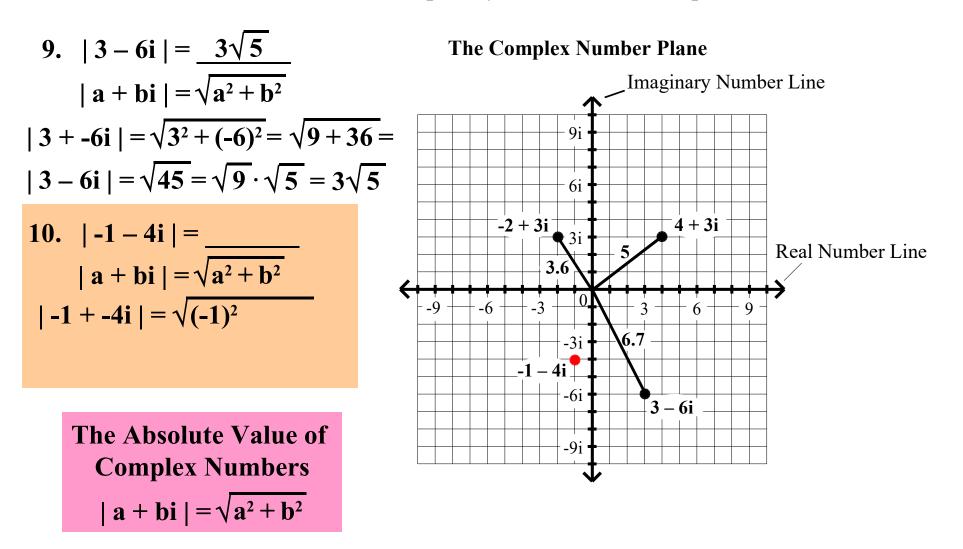


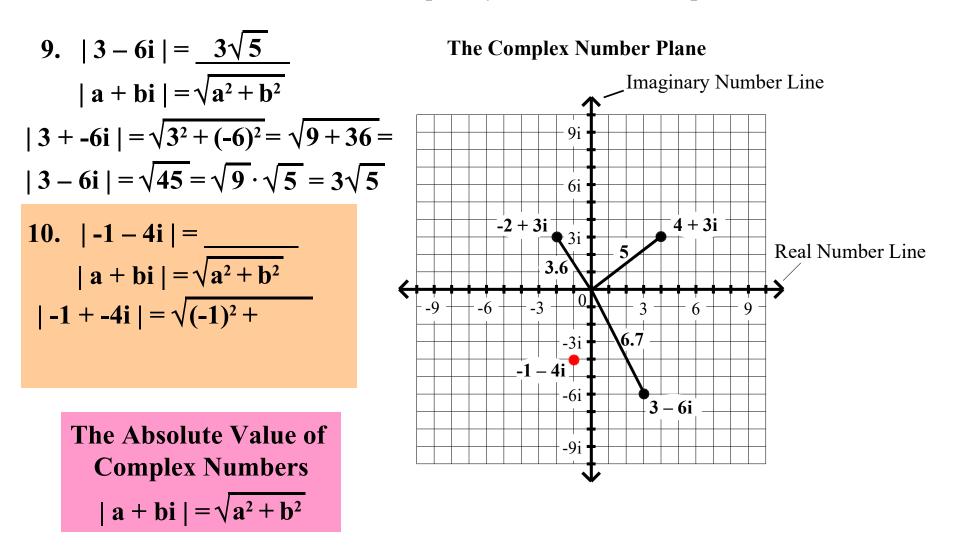


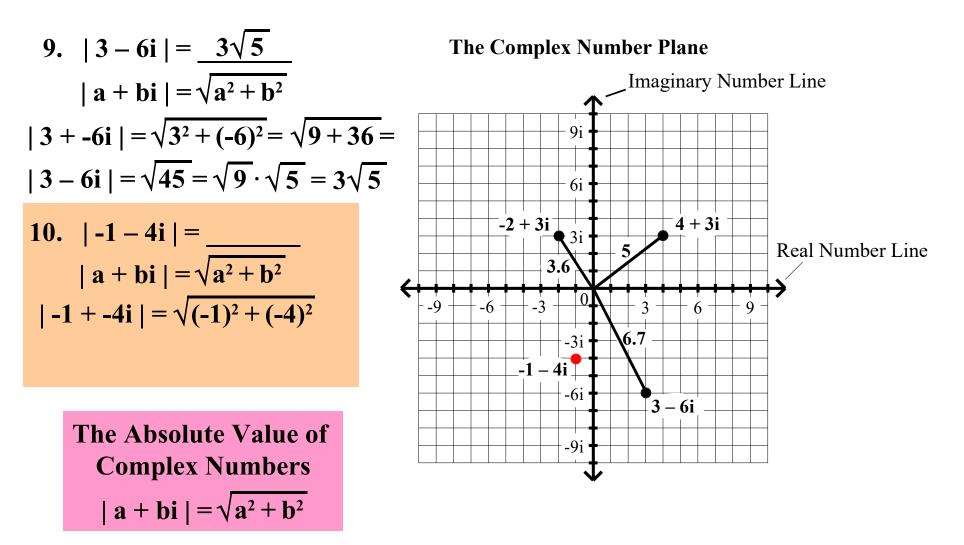


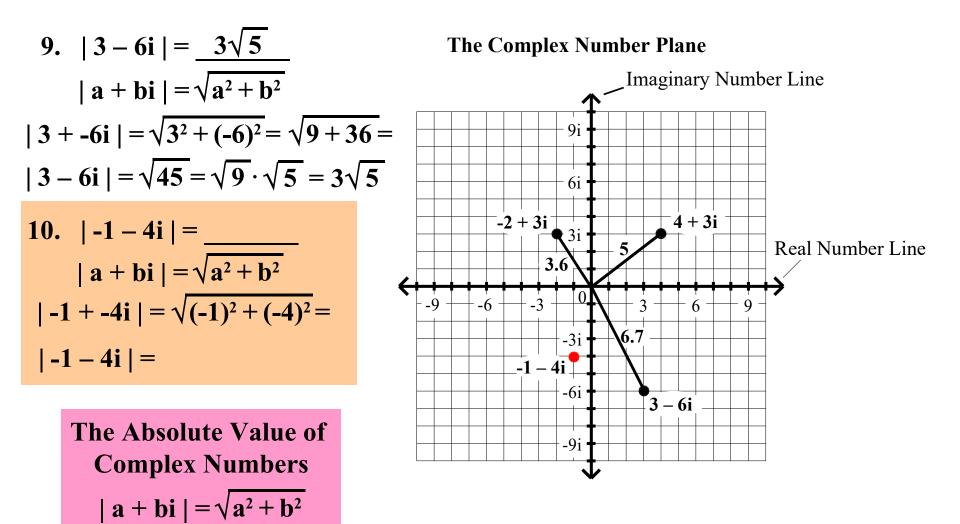


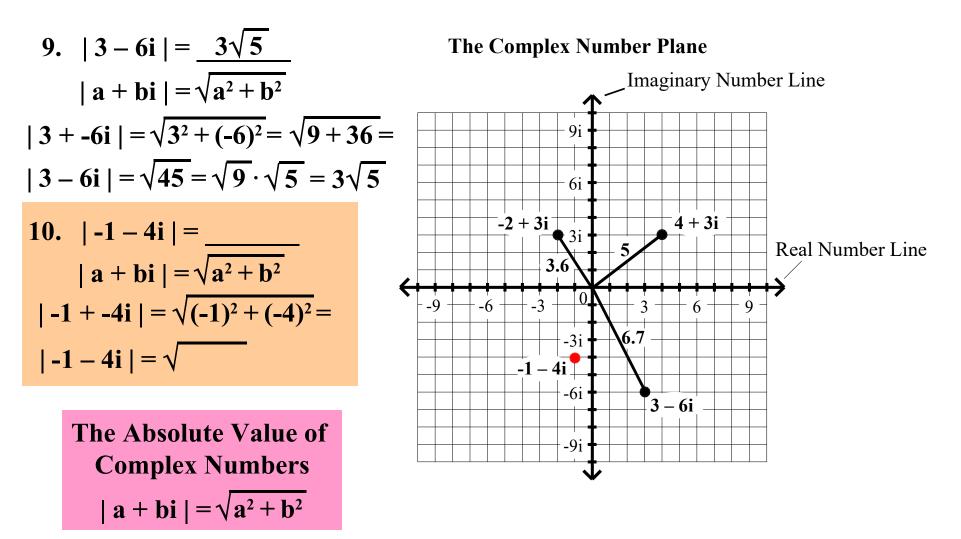


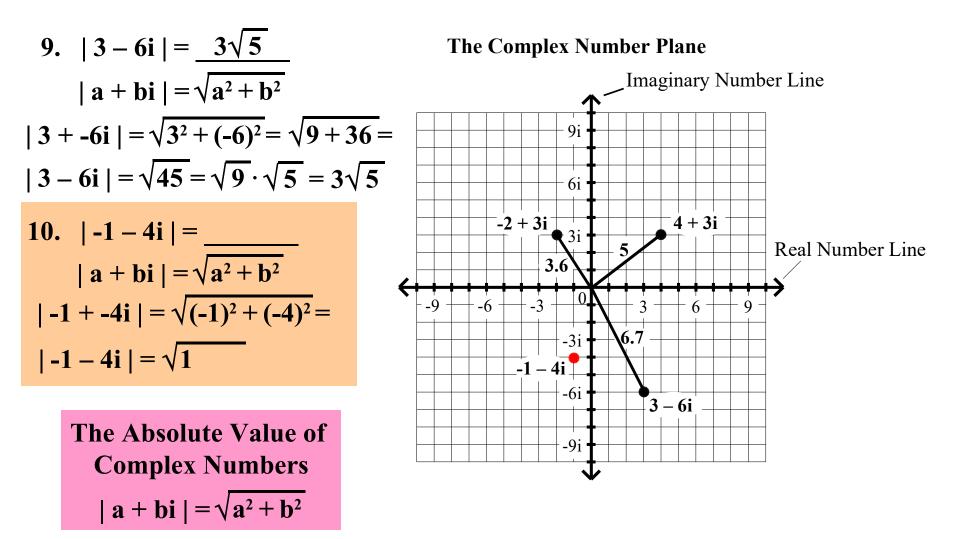


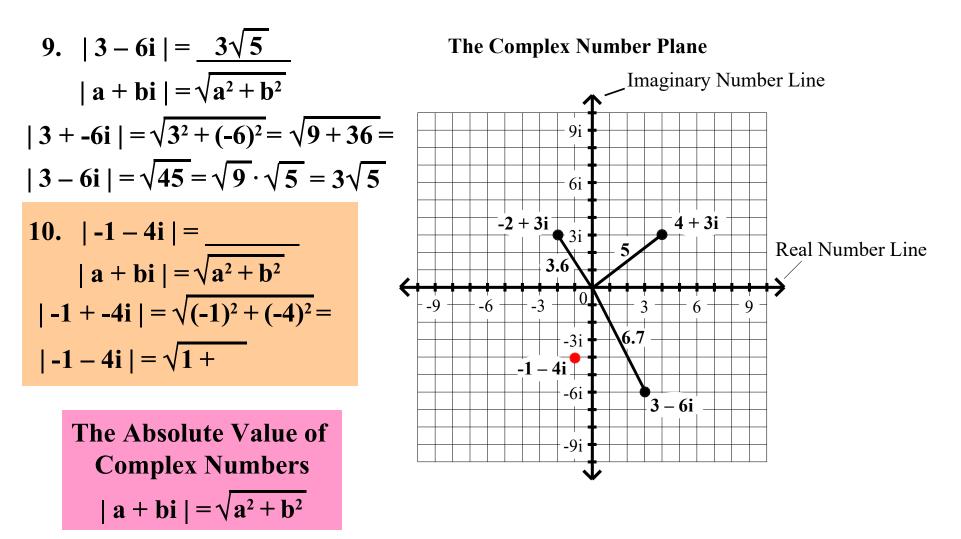


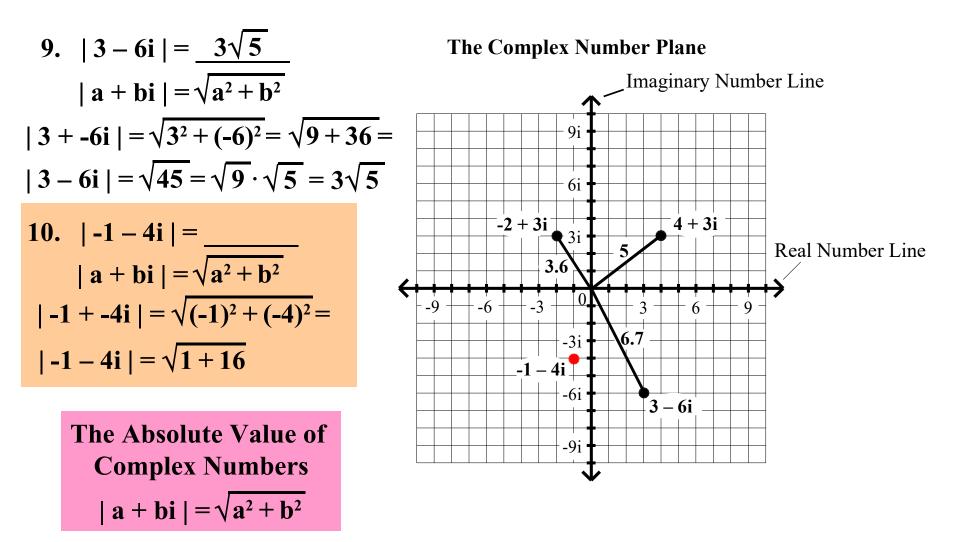


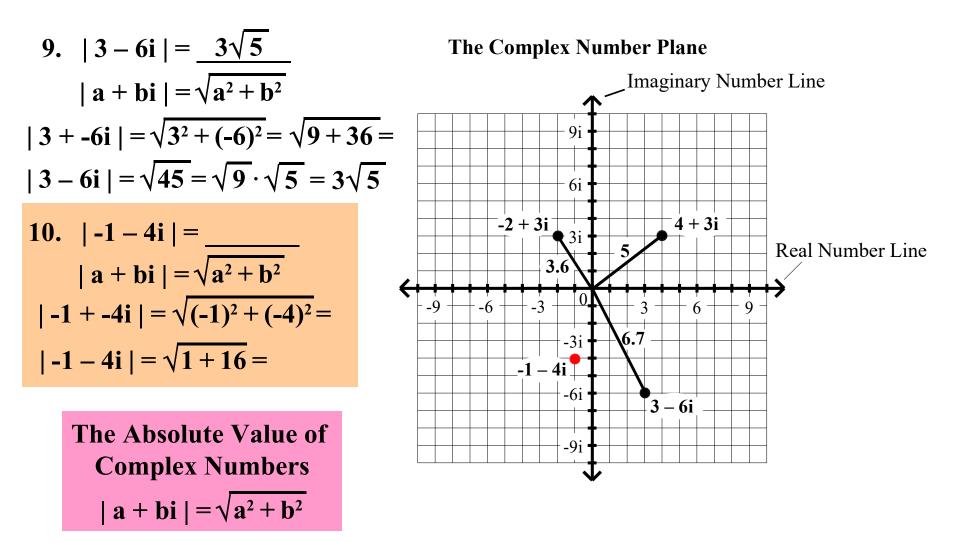


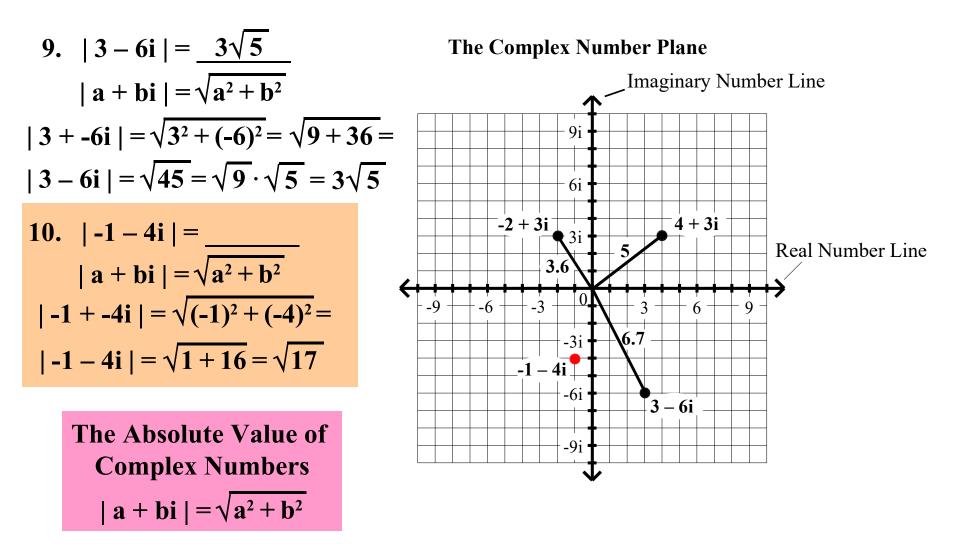


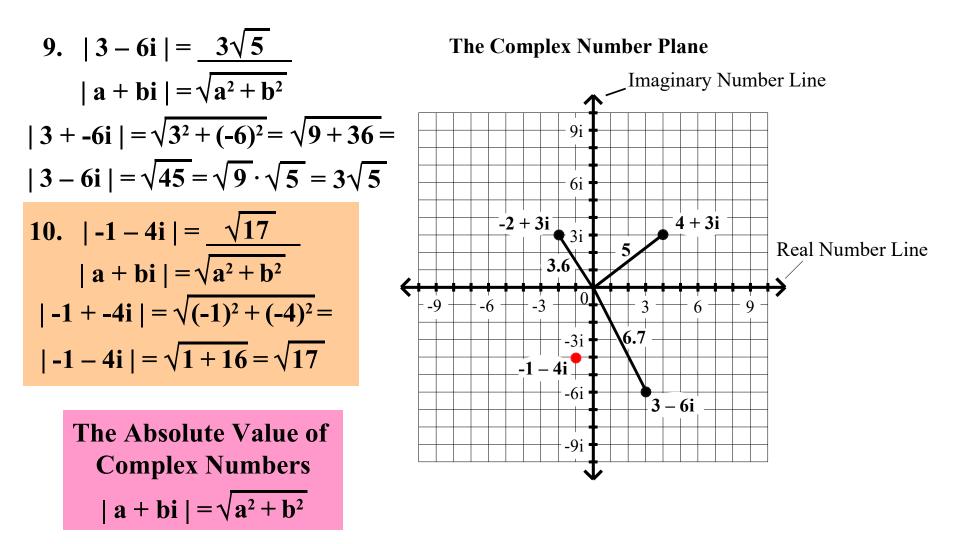




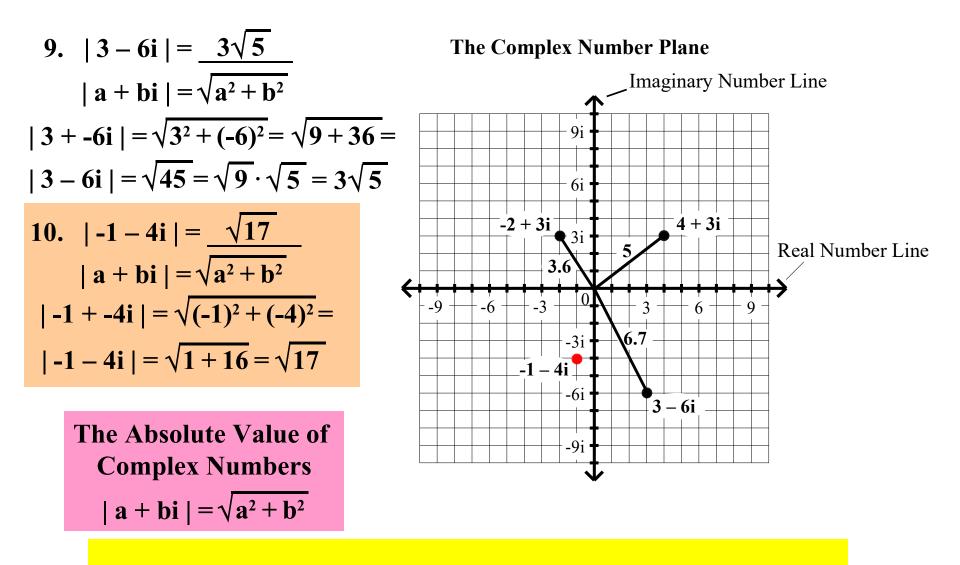






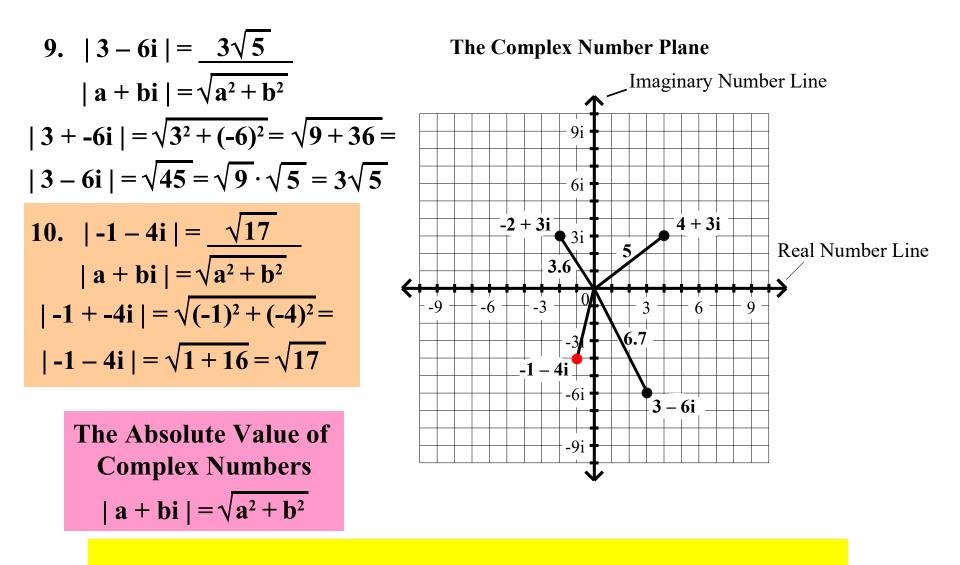


Find the indicated absolute values. Express your answers in simplest form.



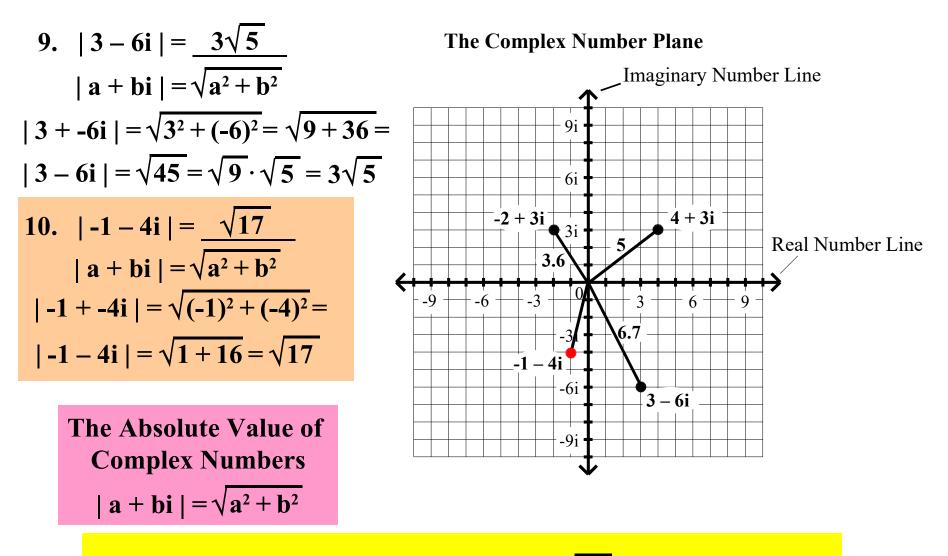
The distance from -1 – 4i to zero

Find the indicated absolute values. Express your answers in simplest form.



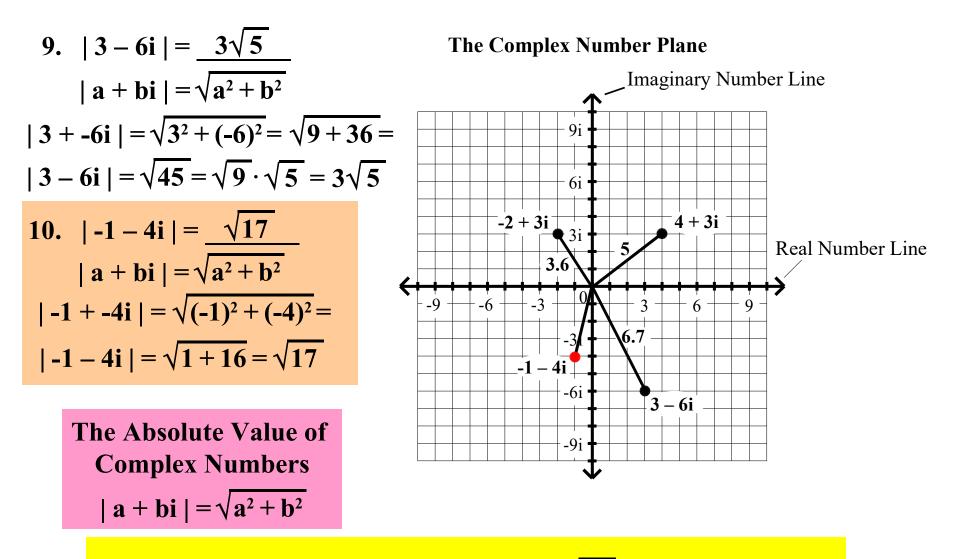
The distance from -1 – 4i to zero

Find the indicated absolute values. Express your answers in simplest form.



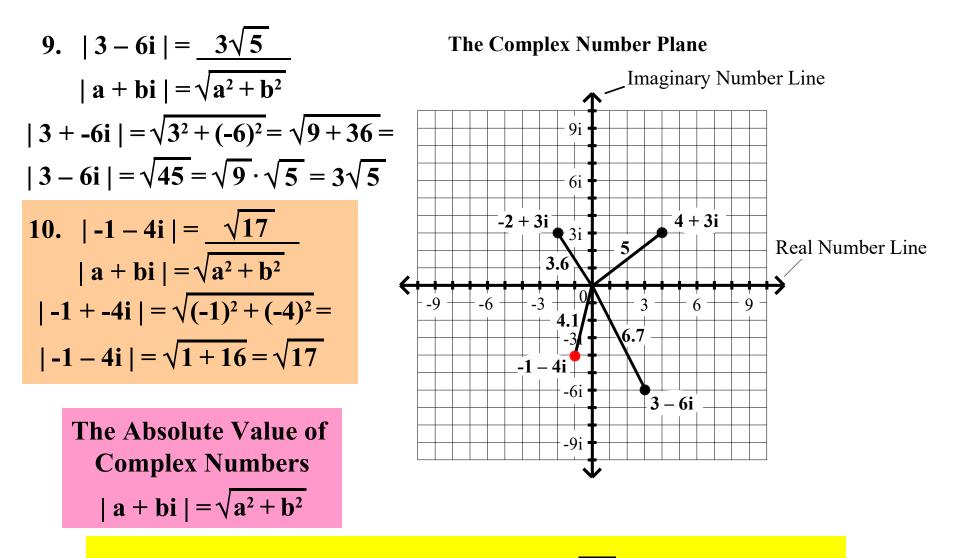
The distance from -1 - 4i to zero is $\sqrt{17}$

Find the indicated absolute values. Express your answers in simplest form.

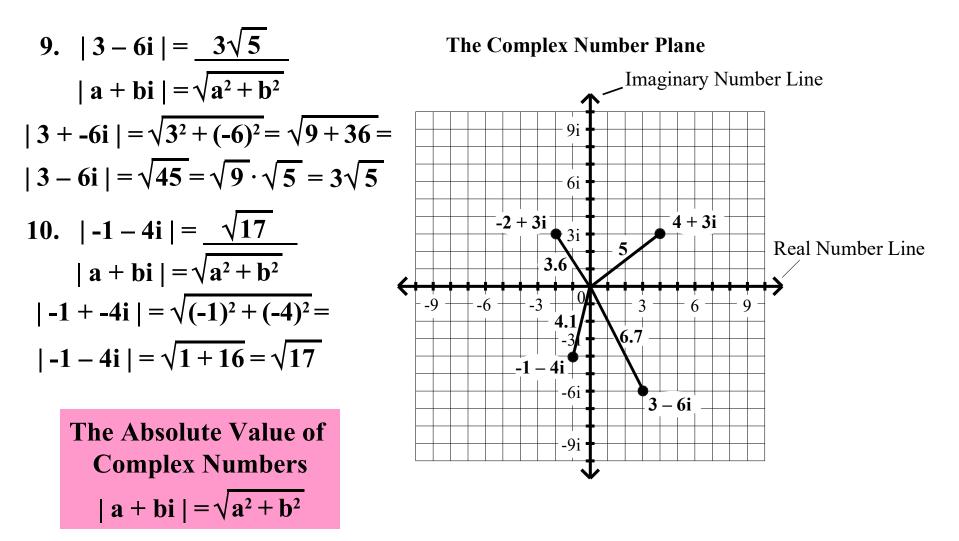


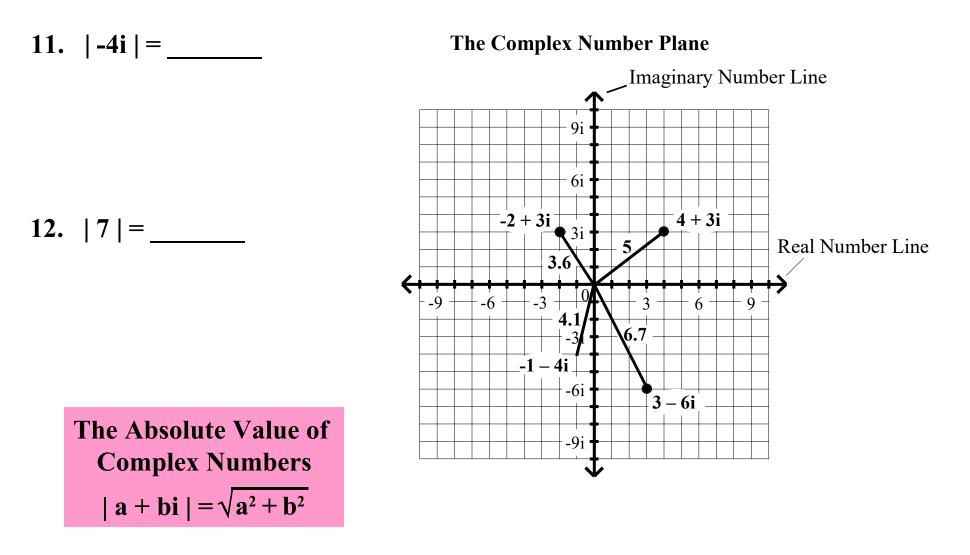
The distance from -1 - 4i to zero is $\sqrt{17} \approx 4.1$ units.

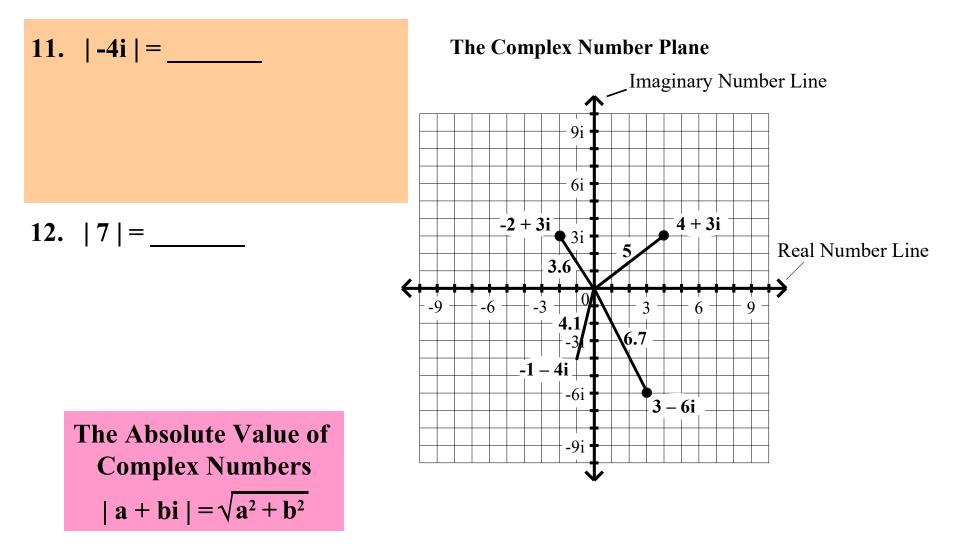
Find the indicated absolute values. Express your answers in simplest form.

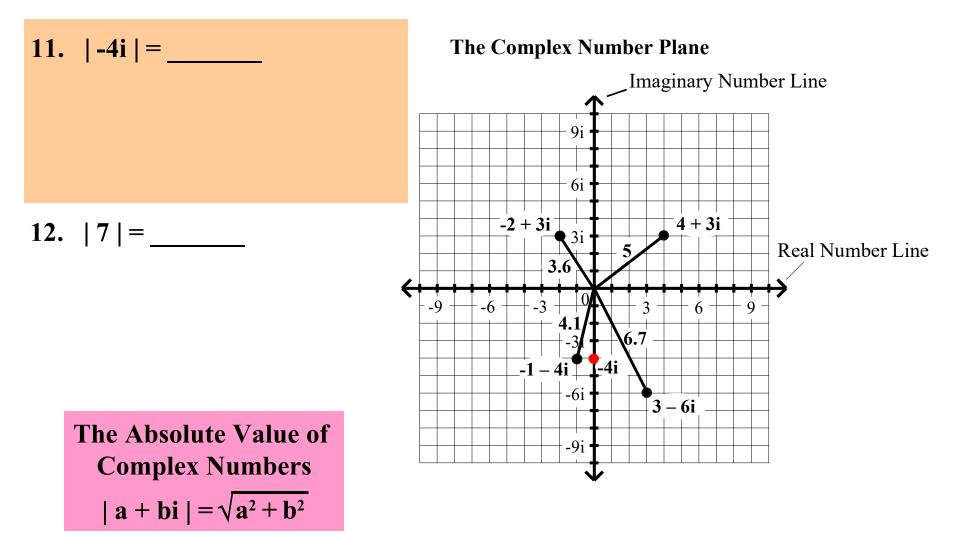


The distance from -1 – 4i to zero is $\sqrt{17} \approx 4.1$ units.

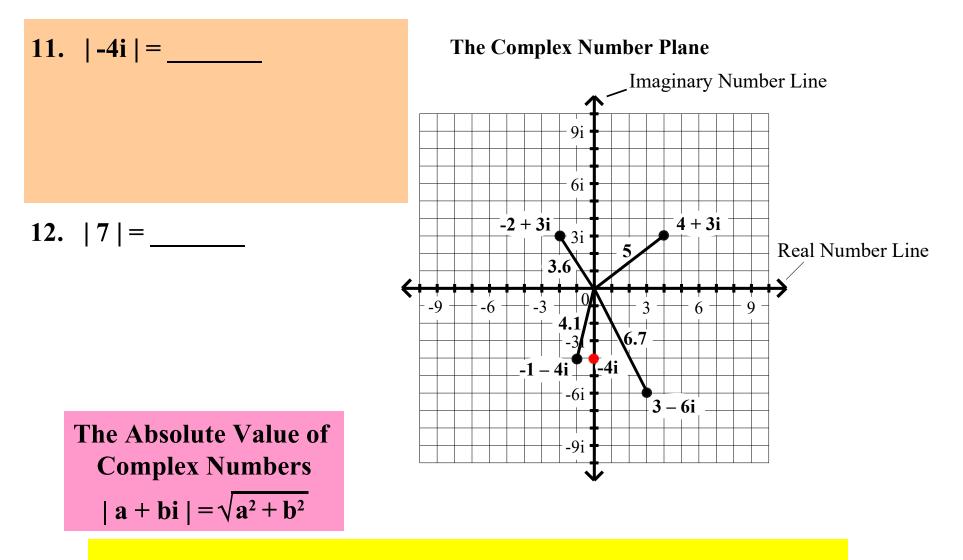






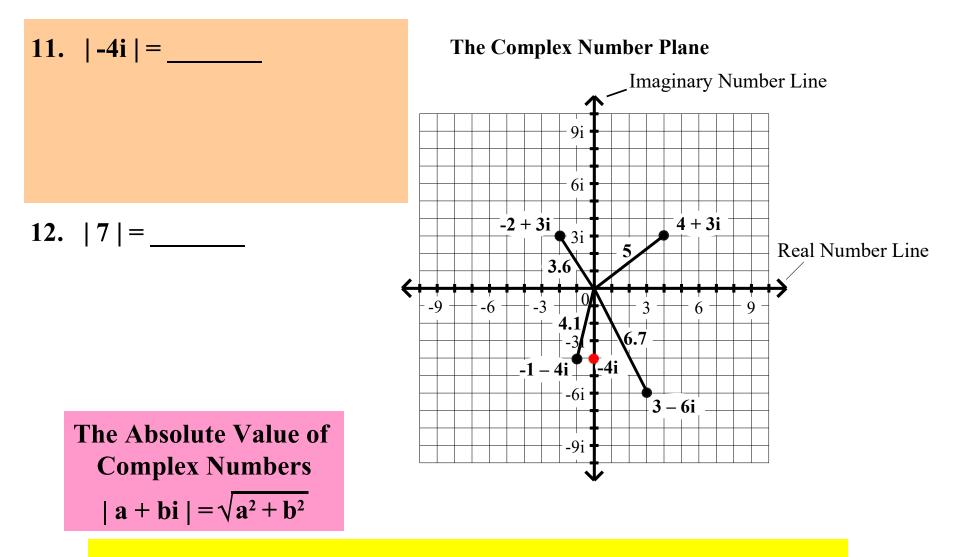


Find the indicated absolute values. Express your answers in simplest form.



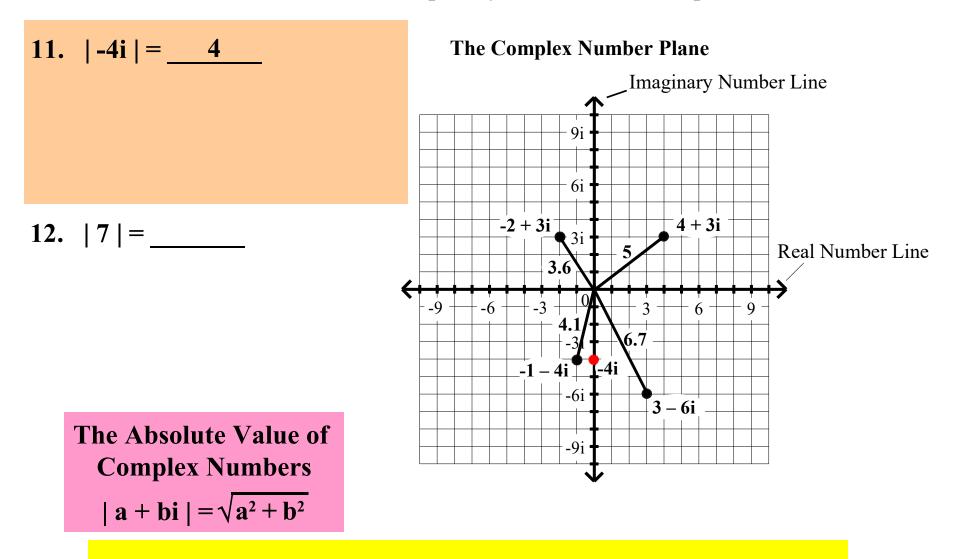
Clearly, the distance from -4i to zero

Find the indicated absolute values. Express your answers in simplest form.

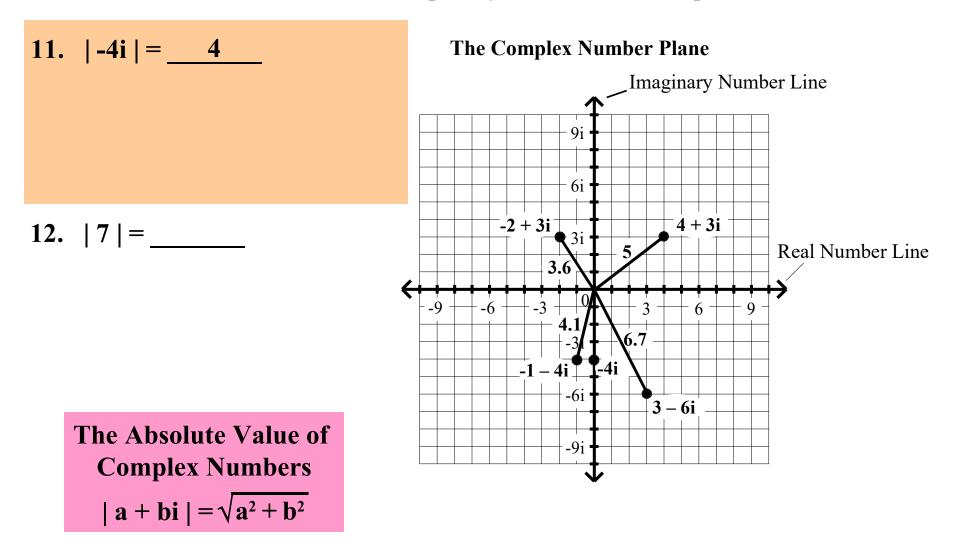


Clearly, the distance from -4i to zero is 4 units.

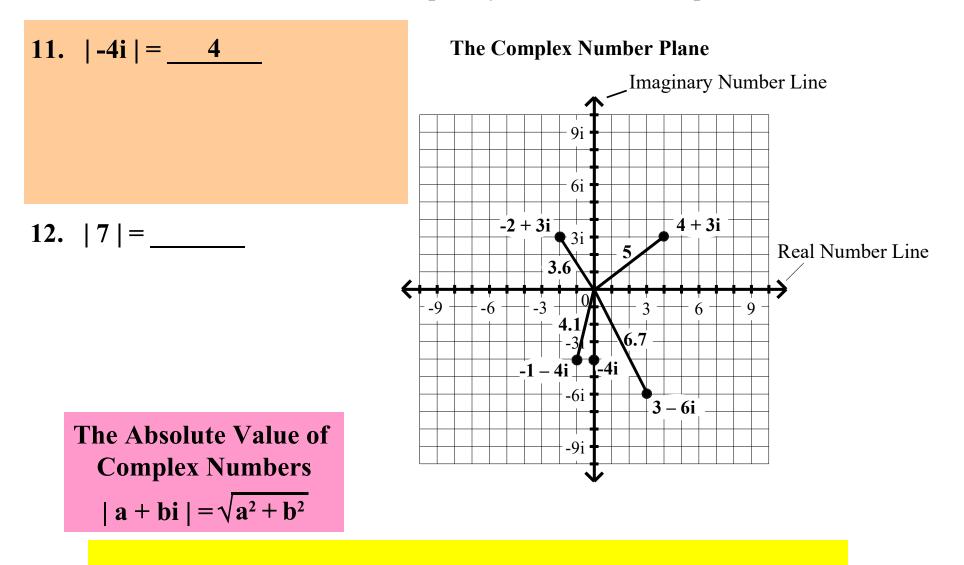
Find the indicated absolute values. Express your answers in simplest form.



Clearly, the distance from -4i to zero is 4 units.

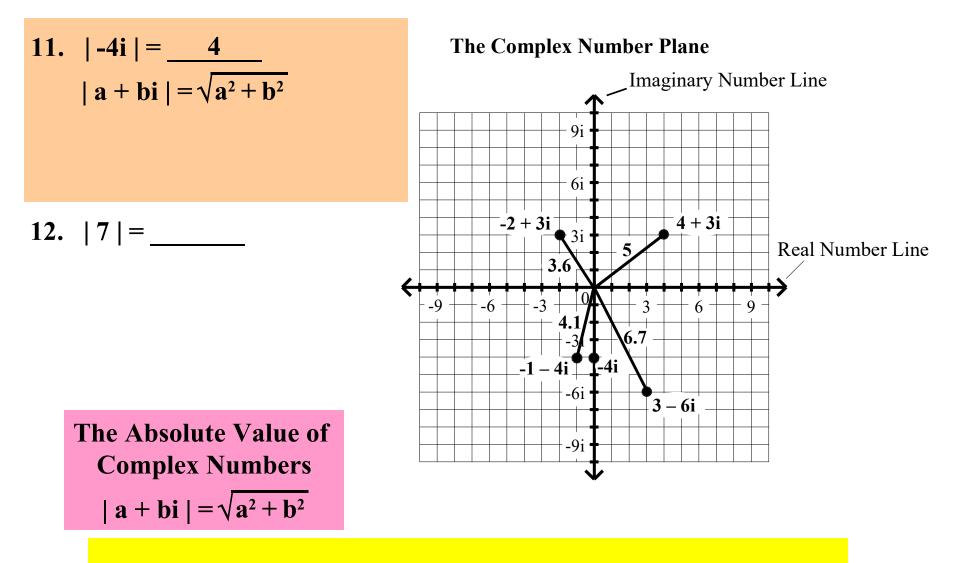


Find the indicated absolute values. Express your answers in simplest form.



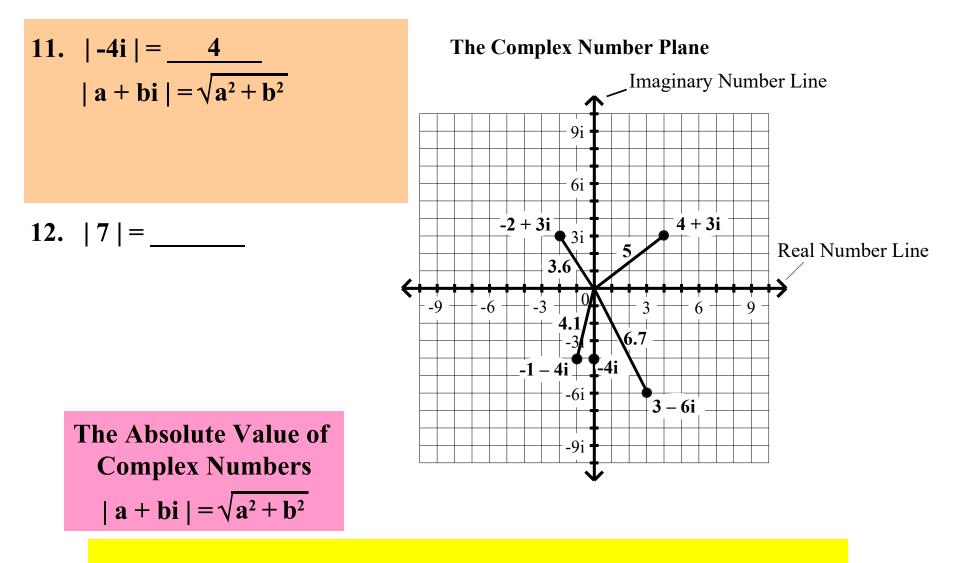
What if we used the formula

Find the indicated absolute values. Express your answers in simplest form.

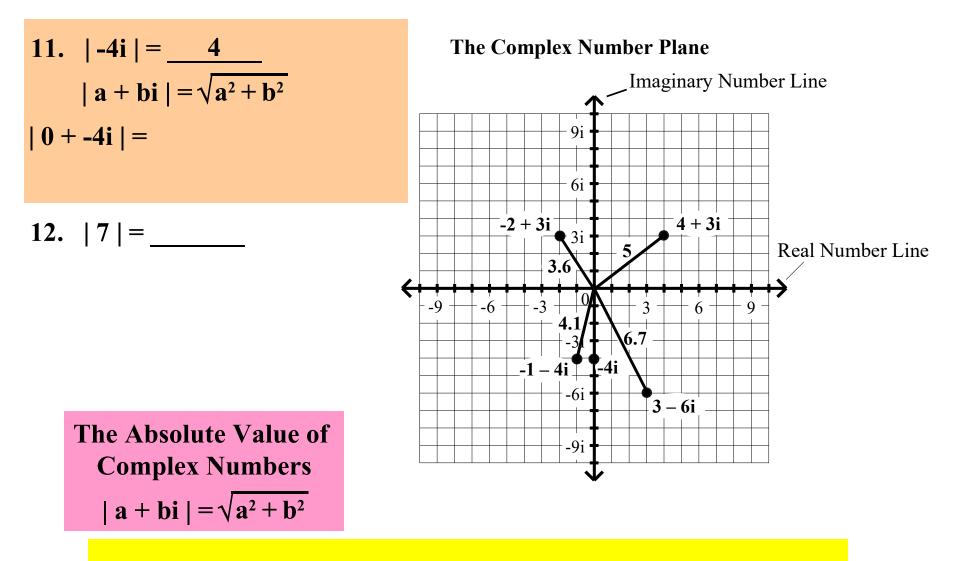


What if we used the formula

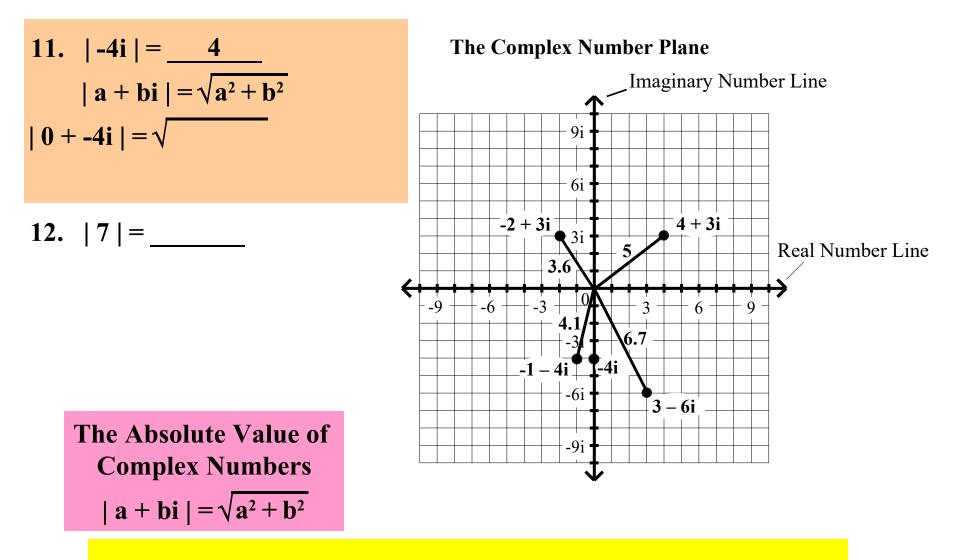
Find the indicated absolute values. Express your answers in simplest form.



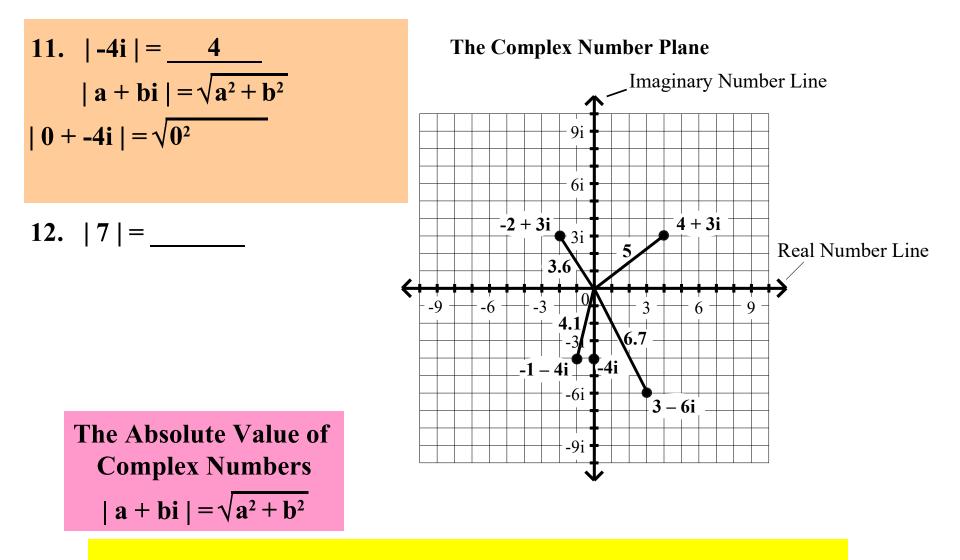
Find the indicated absolute values. Express your answers in simplest form.



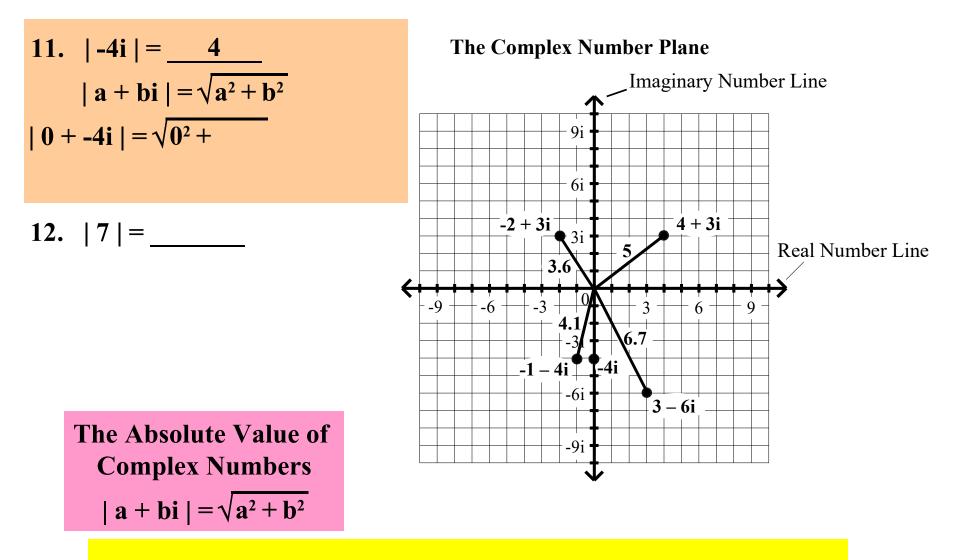
Find the indicated absolute values. Express your answers in simplest form.



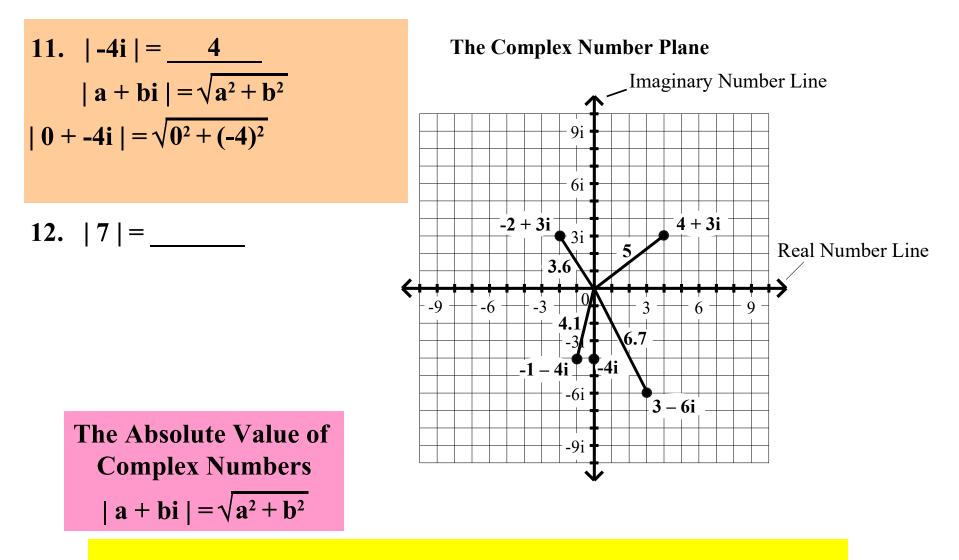
Find the indicated absolute values. Express your answers in simplest form.



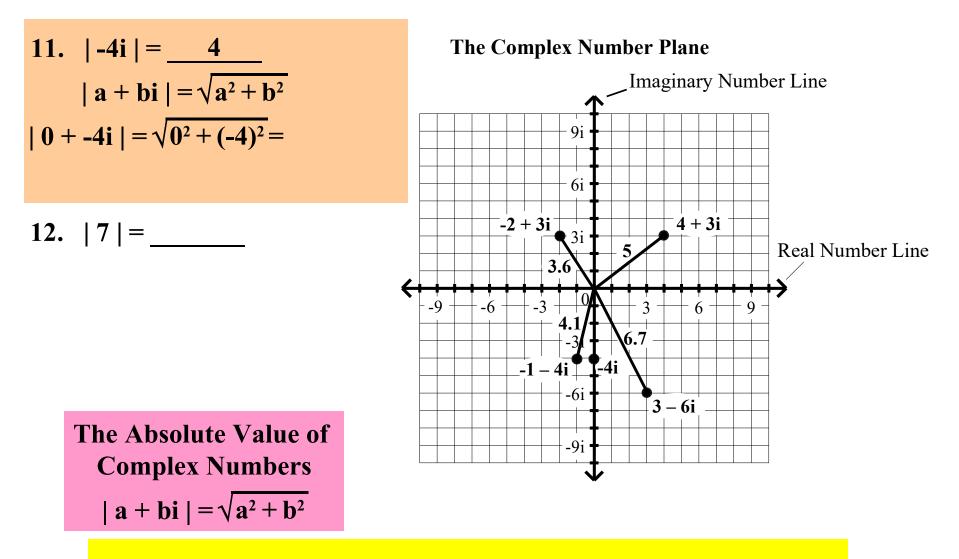
Find the indicated absolute values. Express your answers in simplest form.



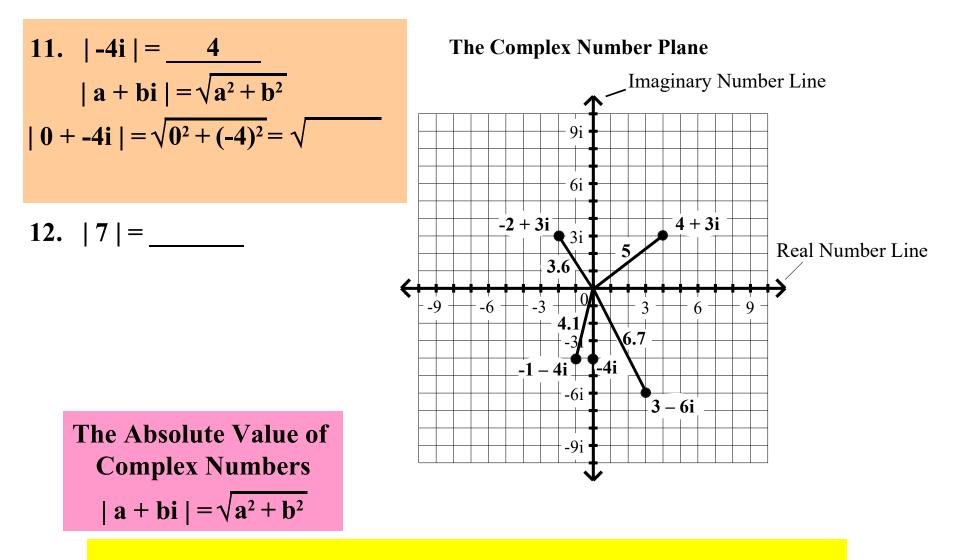
Find the indicated absolute values. Express your answers in simplest form.



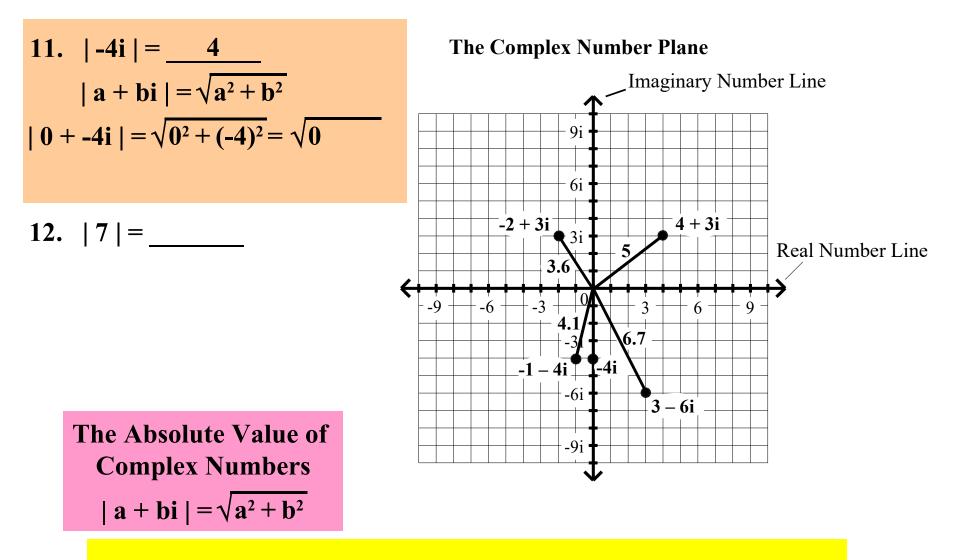
Find the indicated absolute values. Express your answers in simplest form.



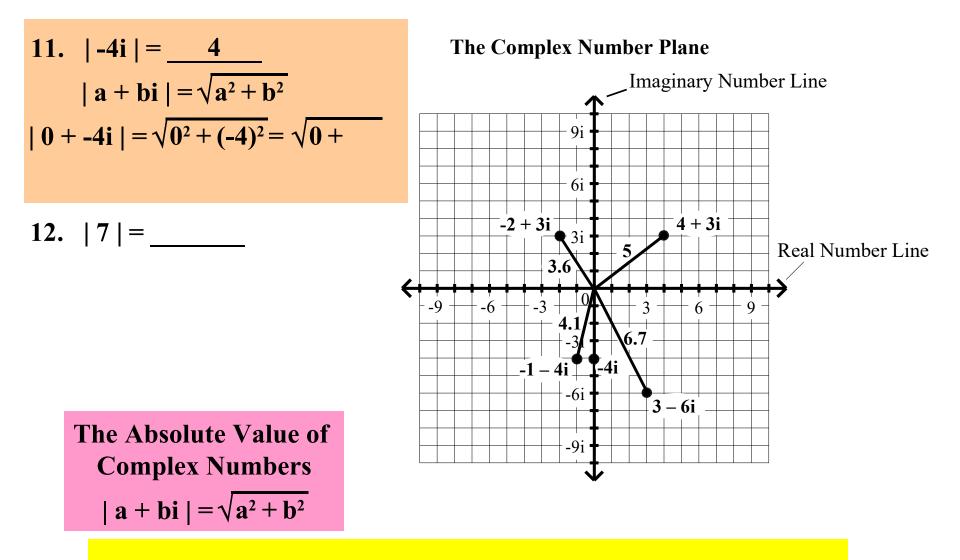
Find the indicated absolute values. Express your answers in simplest form.



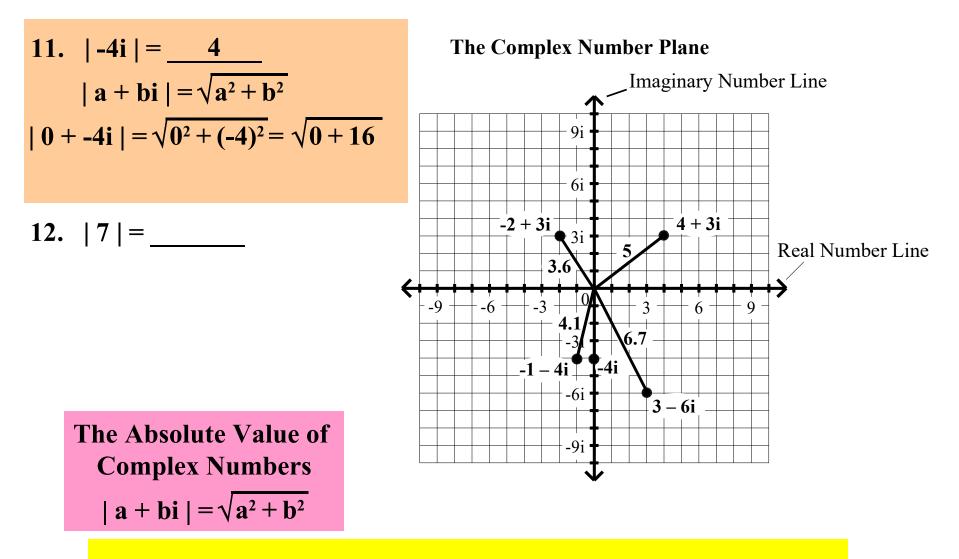
Find the indicated absolute values. Express your answers in simplest form.



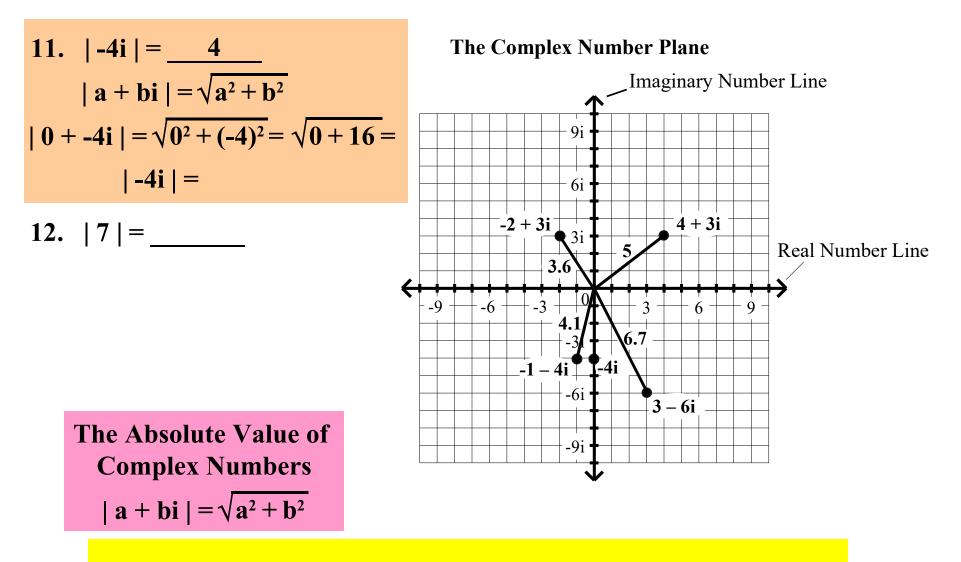
Find the indicated absolute values. Express your answers in simplest form.



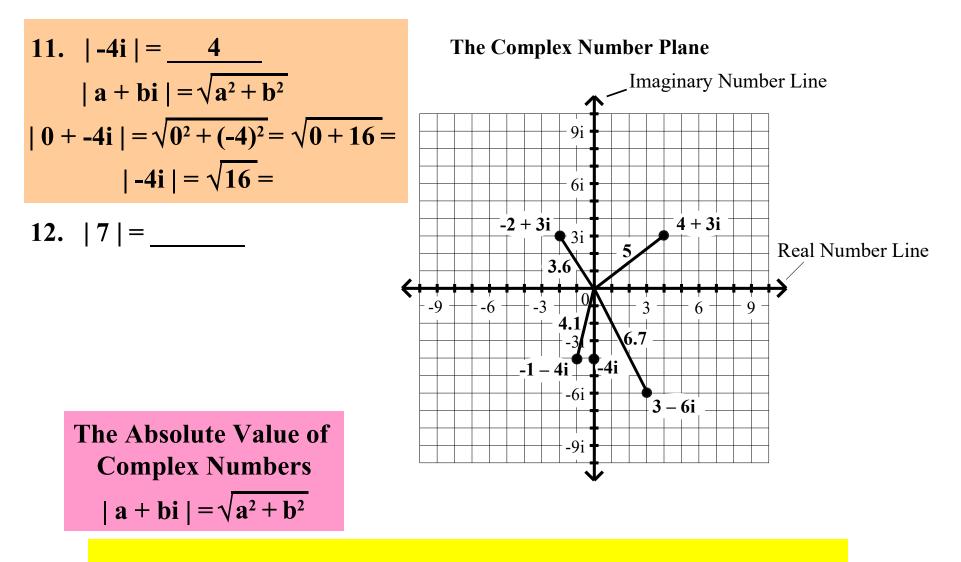
Find the indicated absolute values. Express your answers in simplest form.



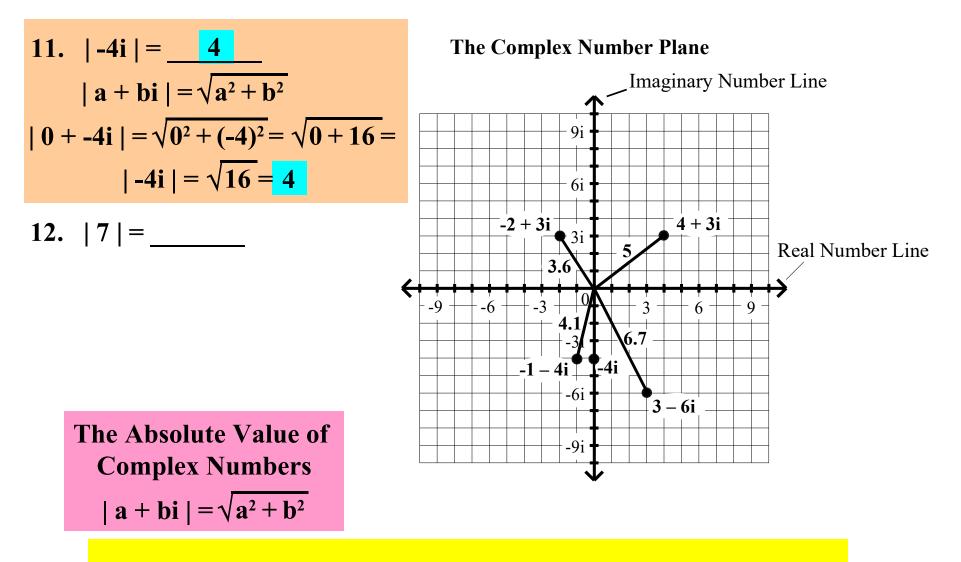
Find the indicated absolute values. Express your answers in simplest form.



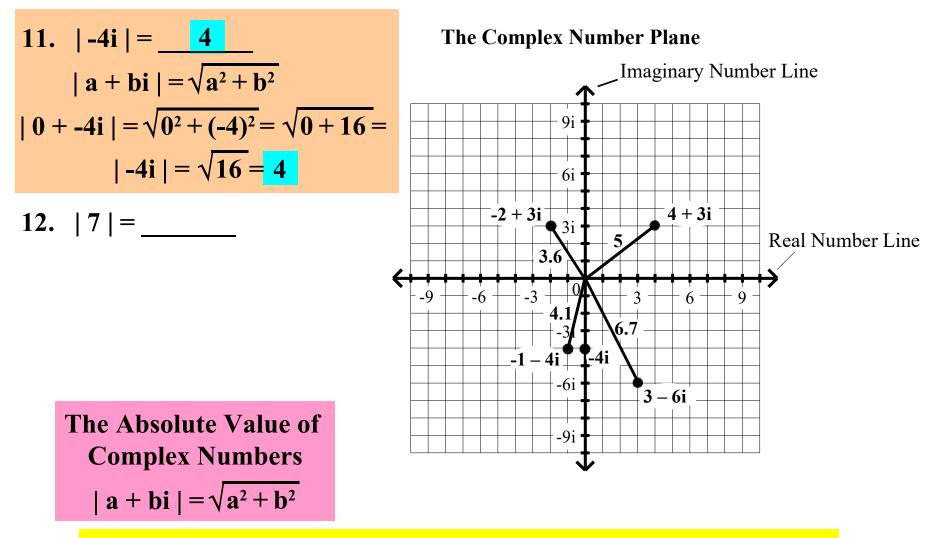
Find the indicated absolute values. Express your answers in simplest form.



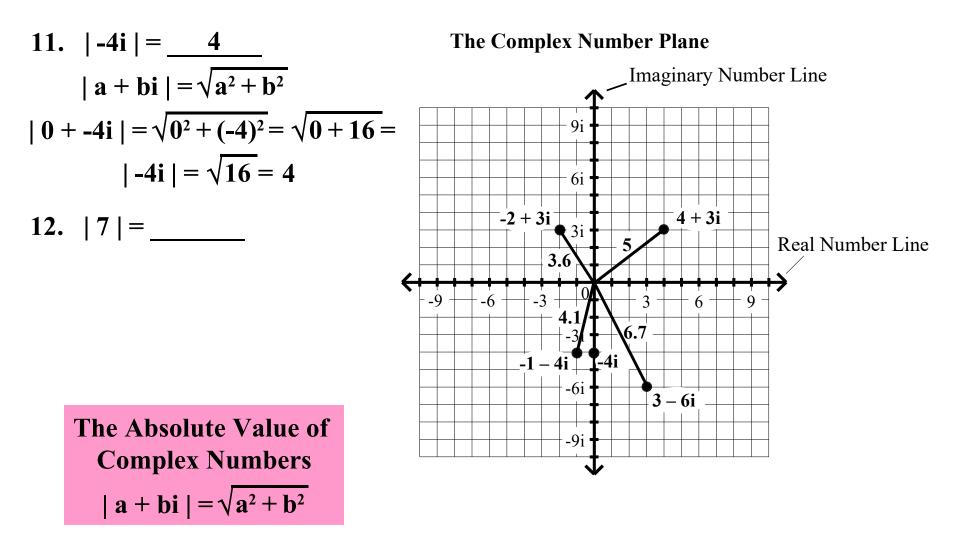
Find the indicated absolute values. Express your answers in simplest form.

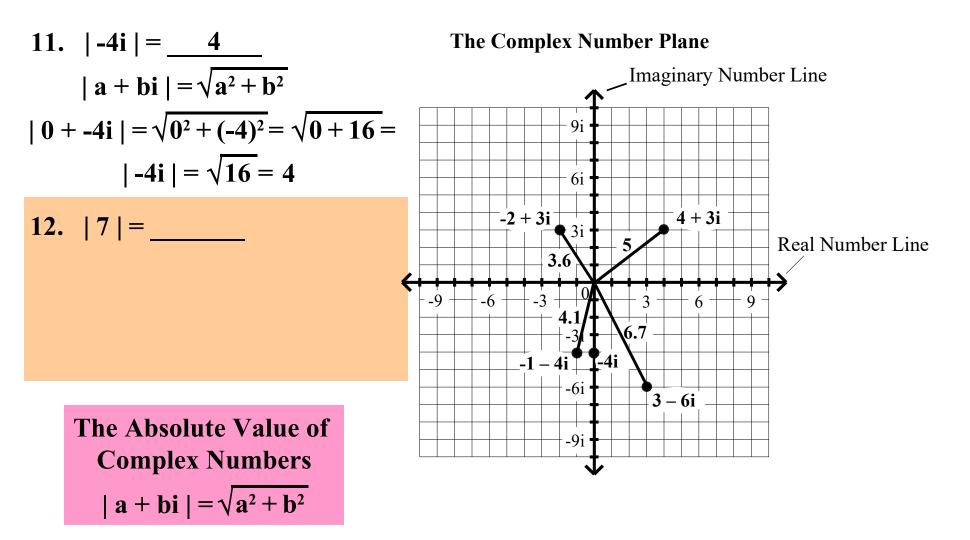


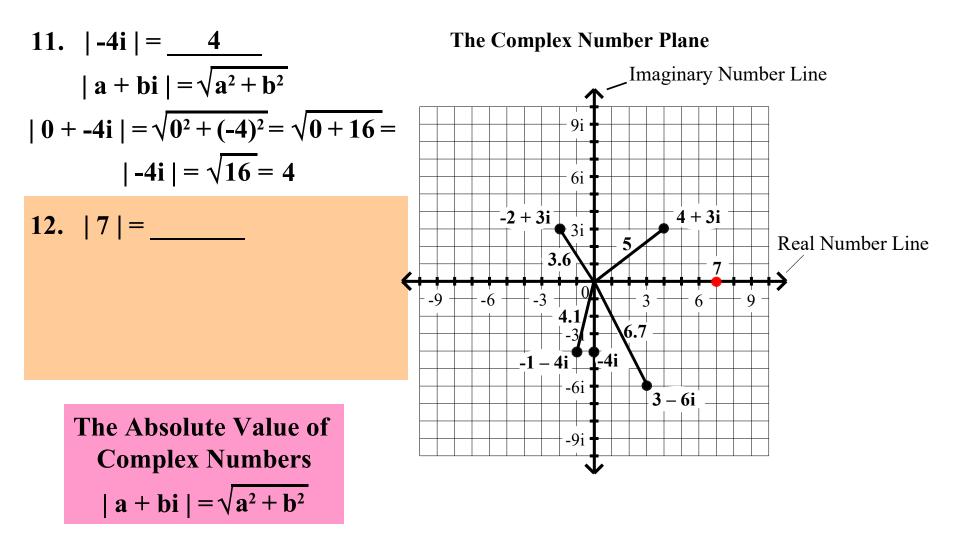
Find the indicated absolute values. Express your answers in simplest form.

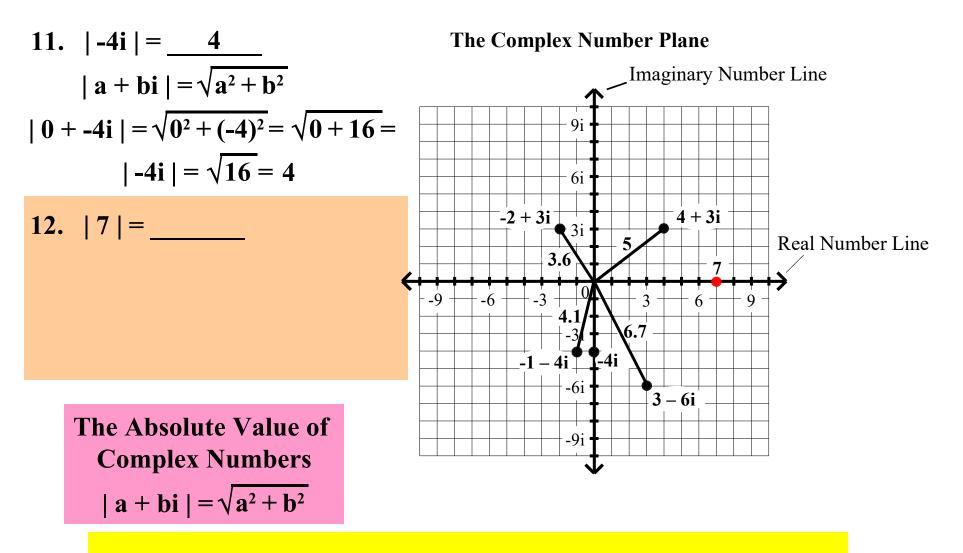


Of course, you don't <u>need</u> to use the formula to find the absolute value of any imaginary number.

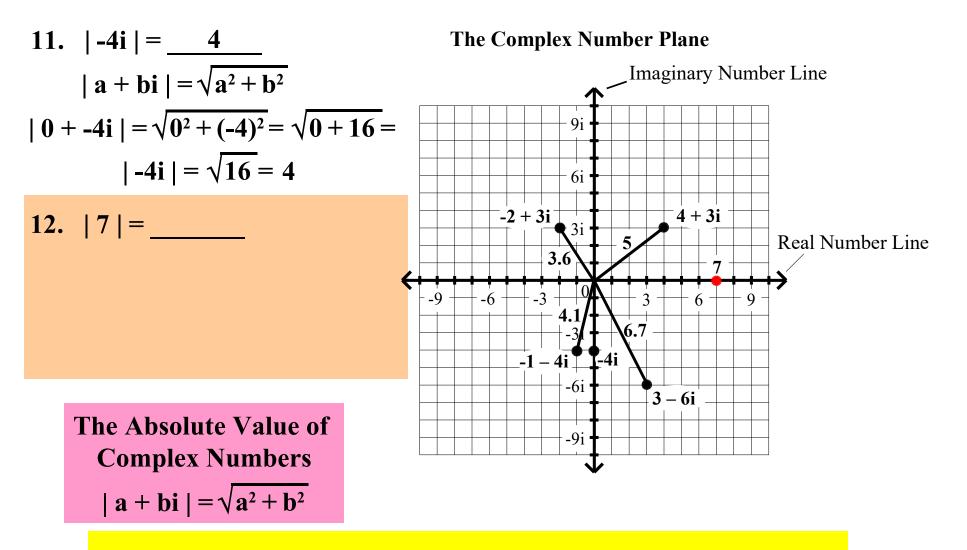




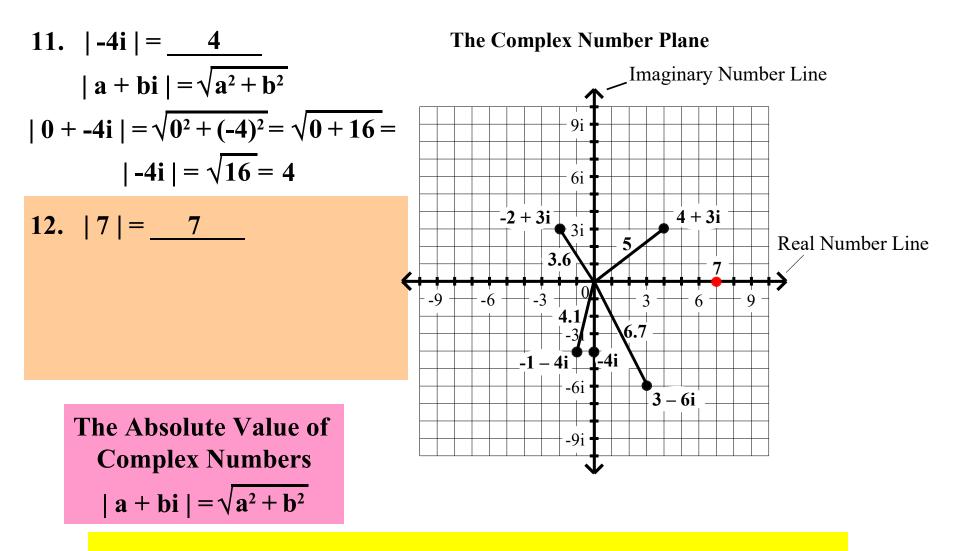




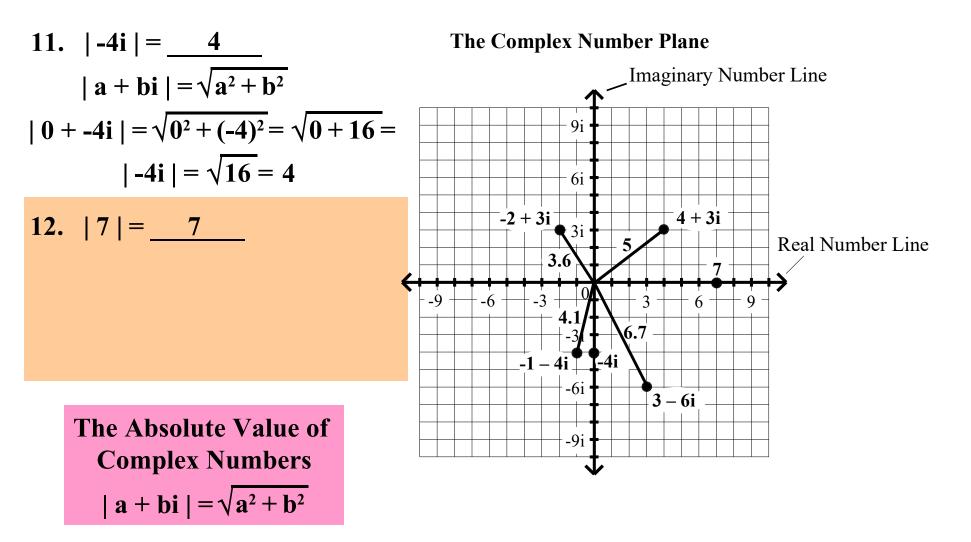
Clearly, the distance from 7 to zero

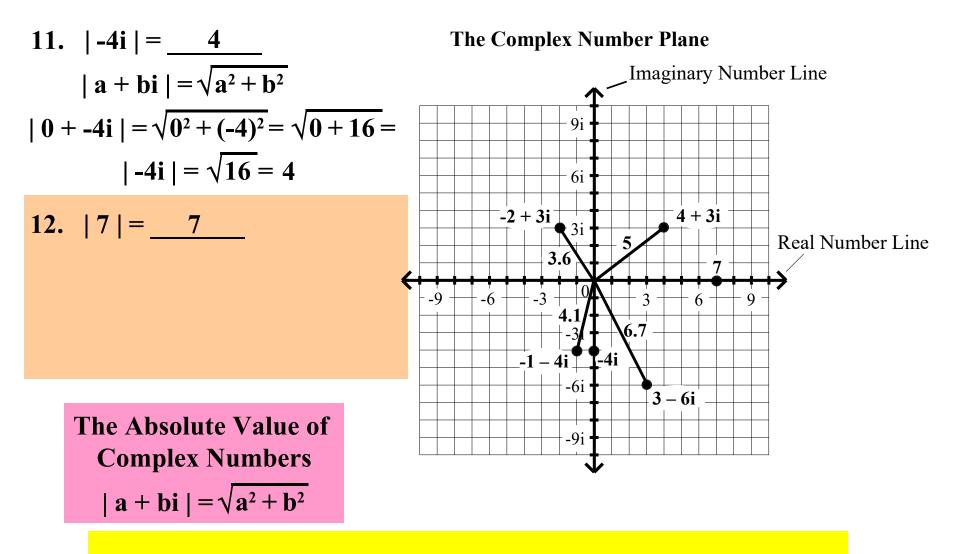


Clearly, the distance from 7 to zero is 7 units.

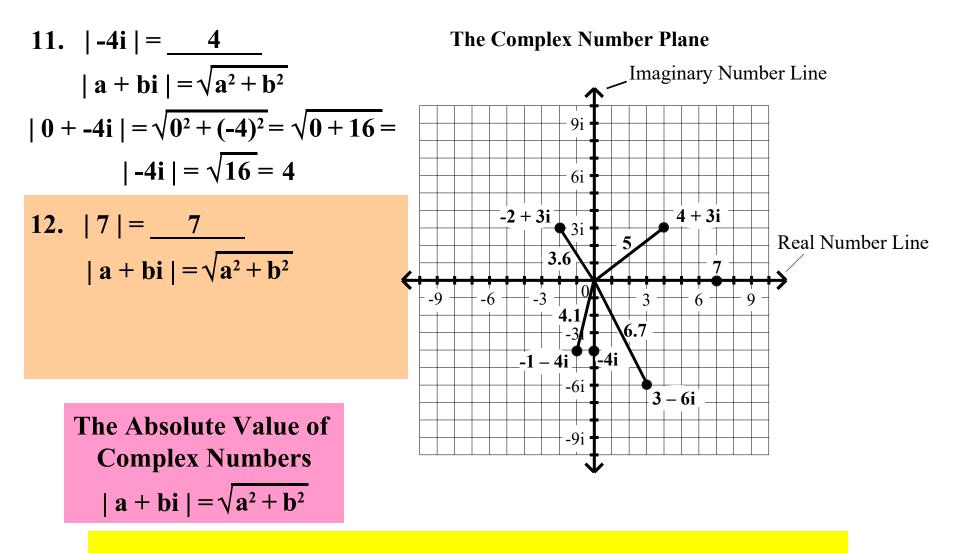


Clearly, the distance from 7 to zero is 7 units.

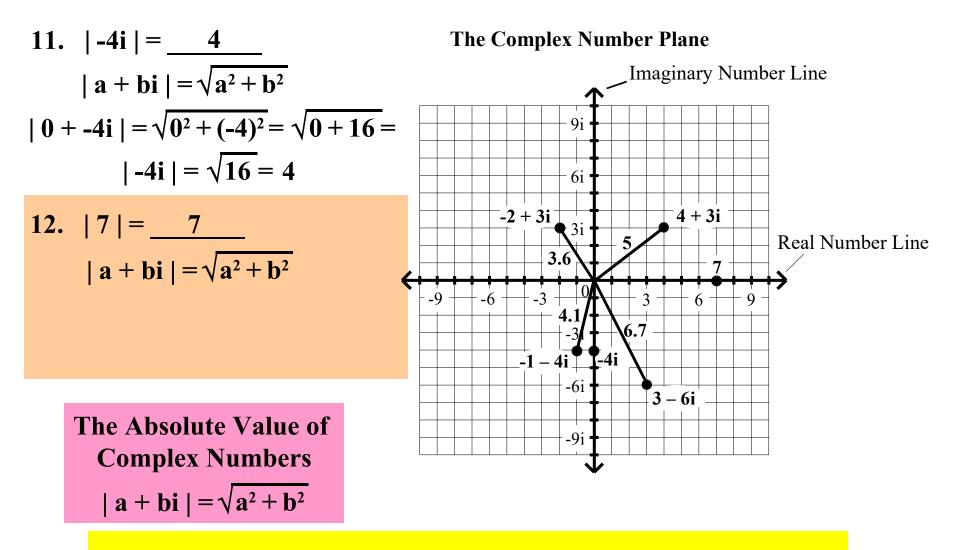


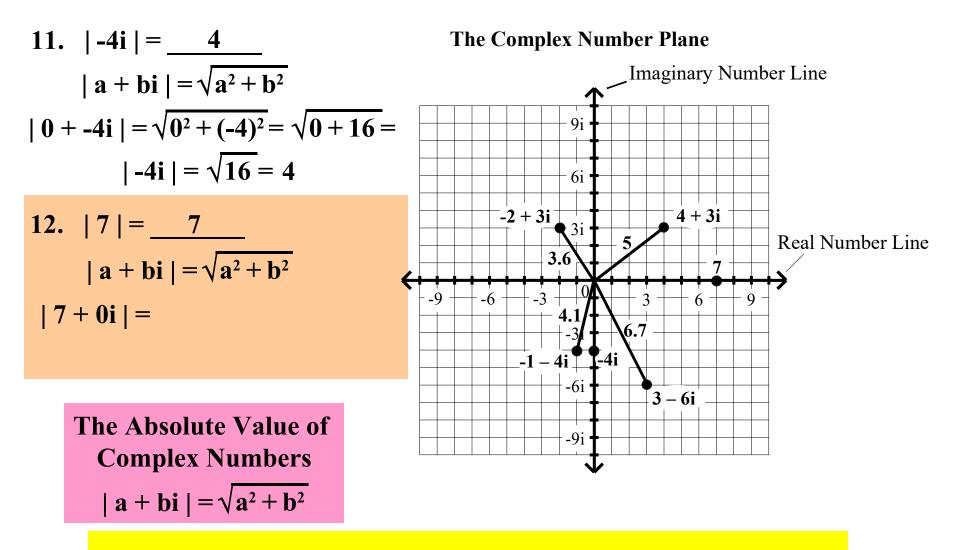


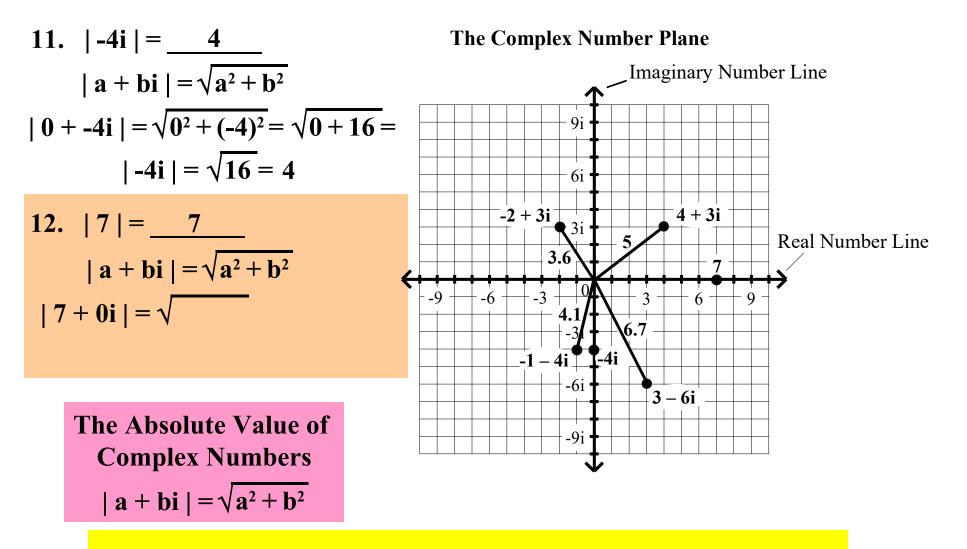
What if we used the formula

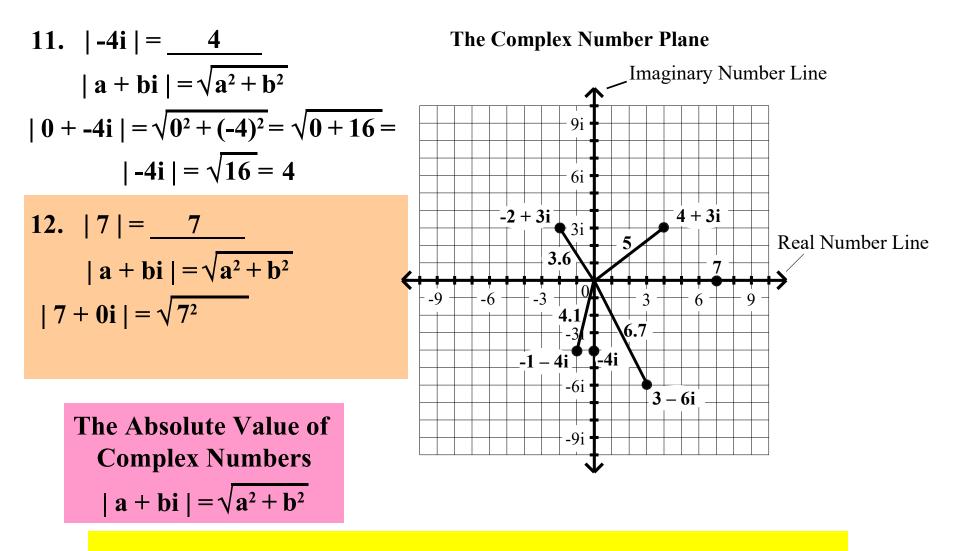


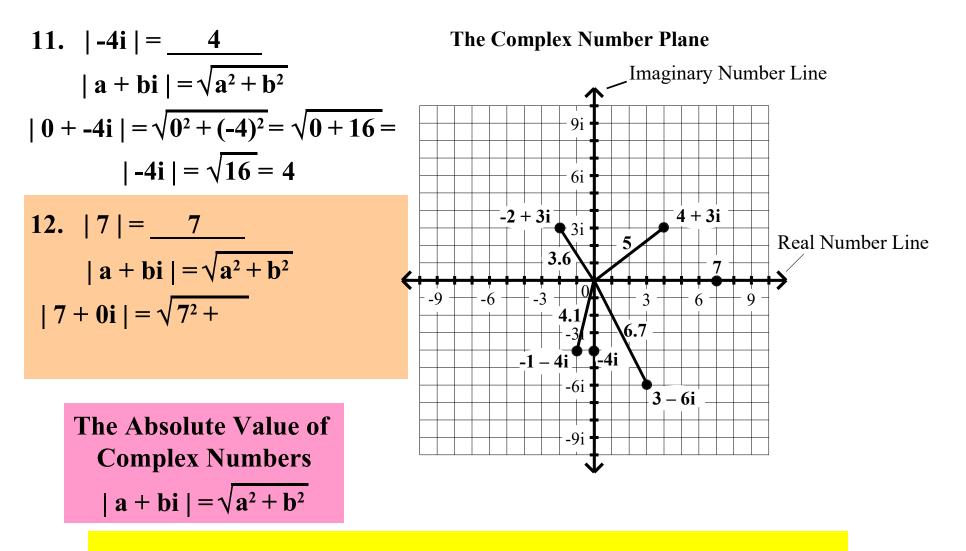
What if we used the formula

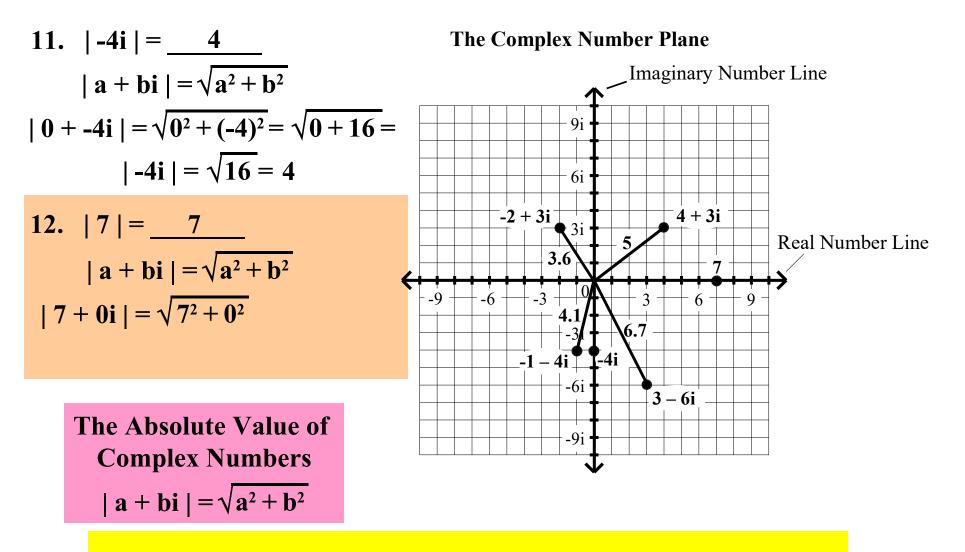


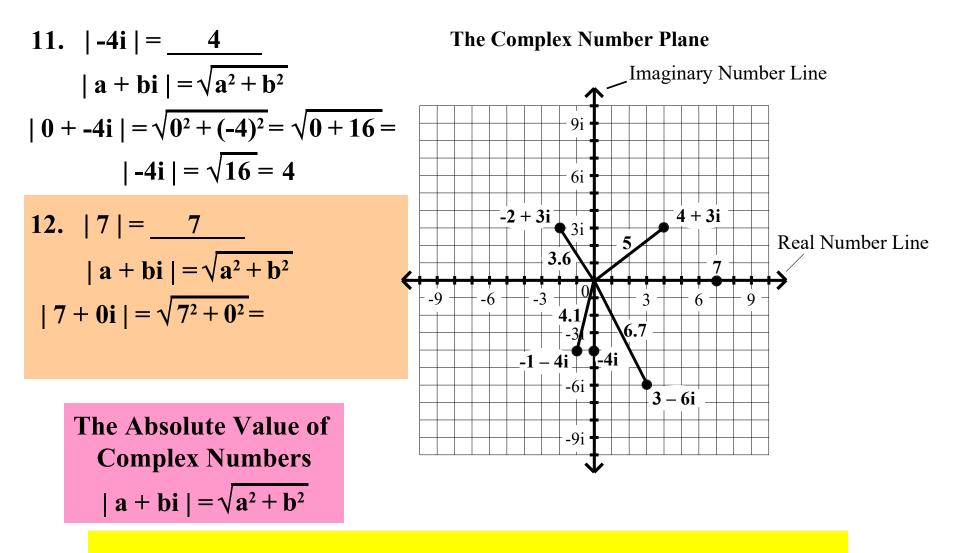


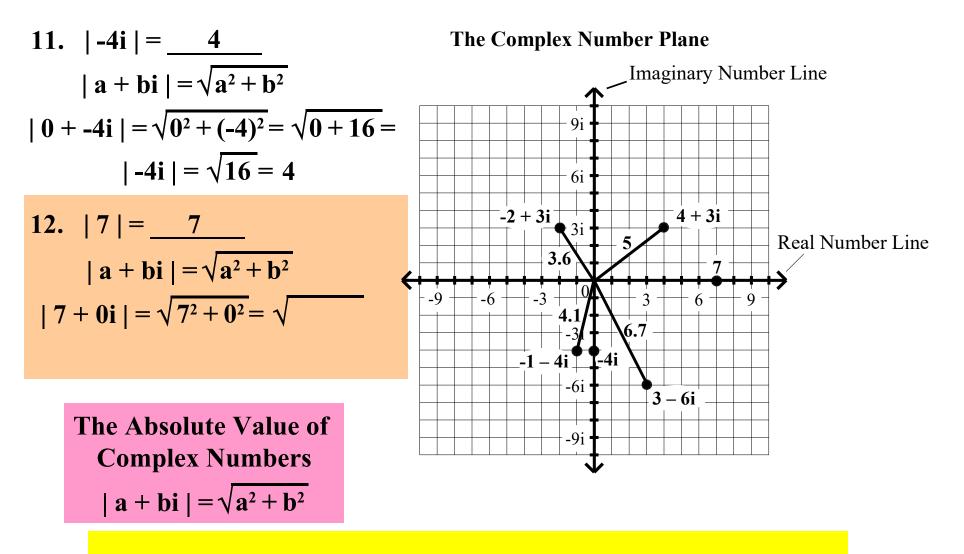


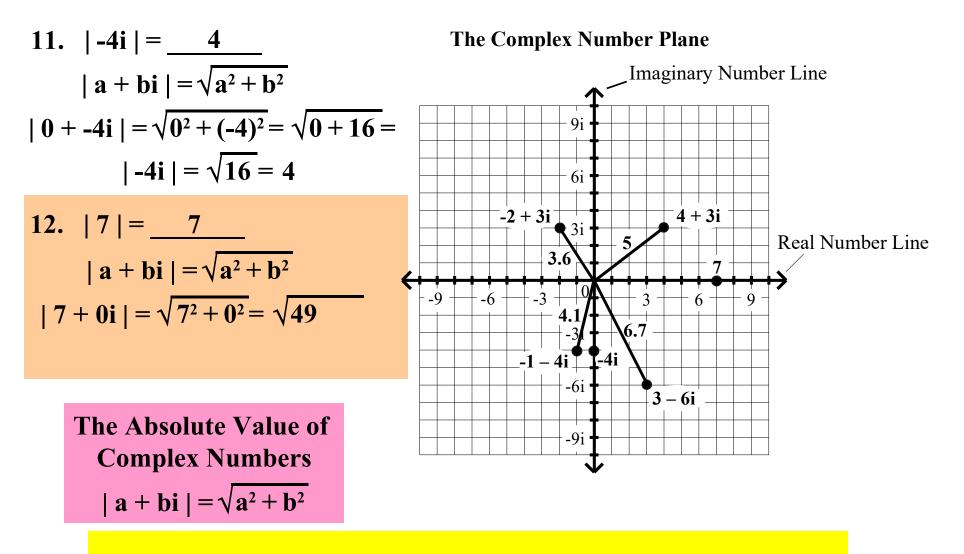


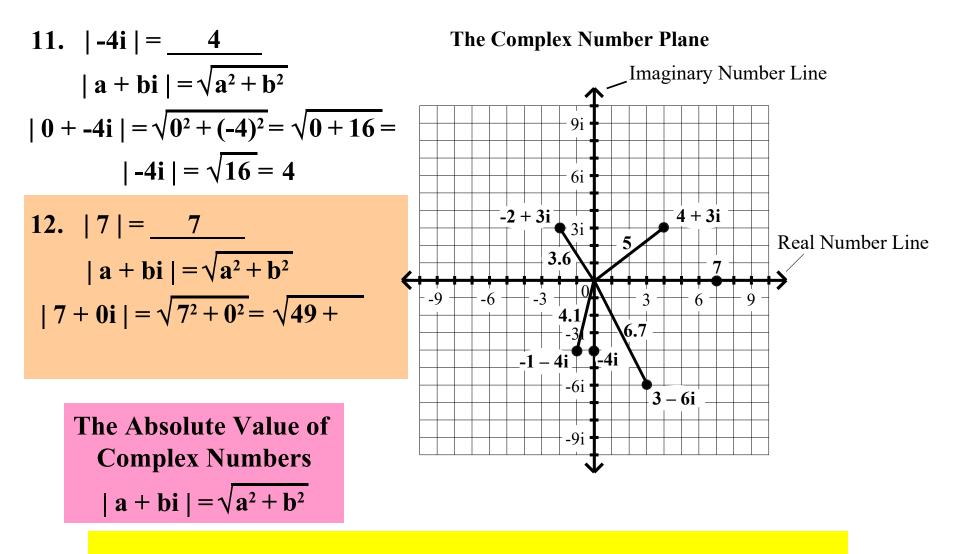


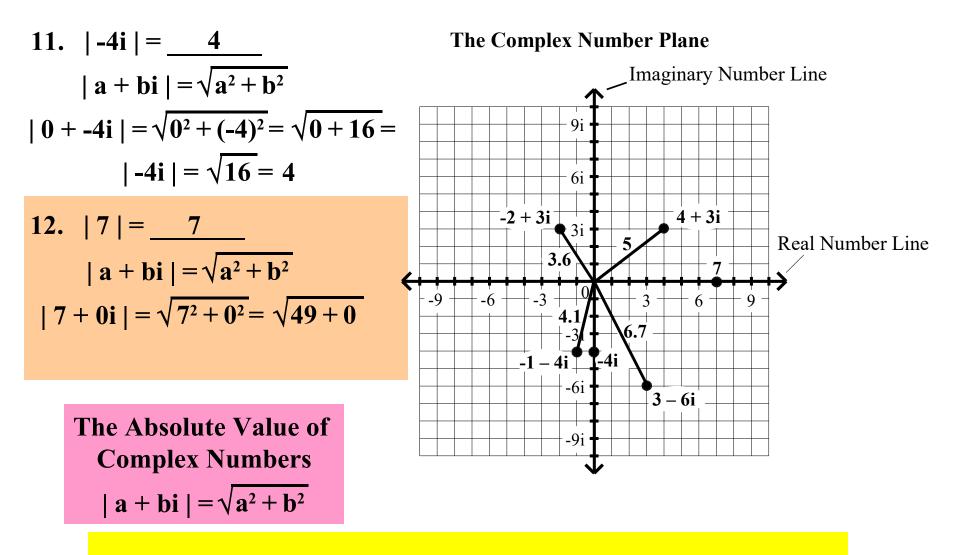


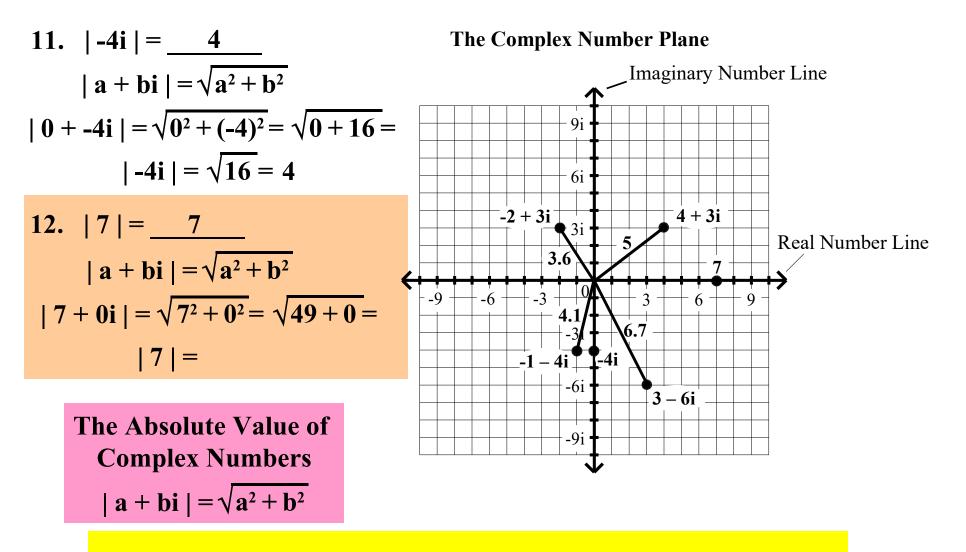


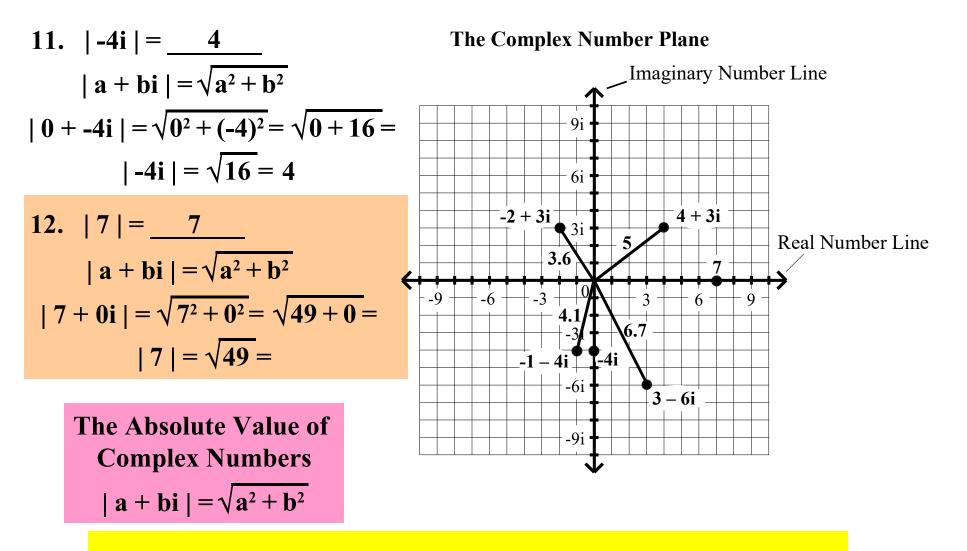


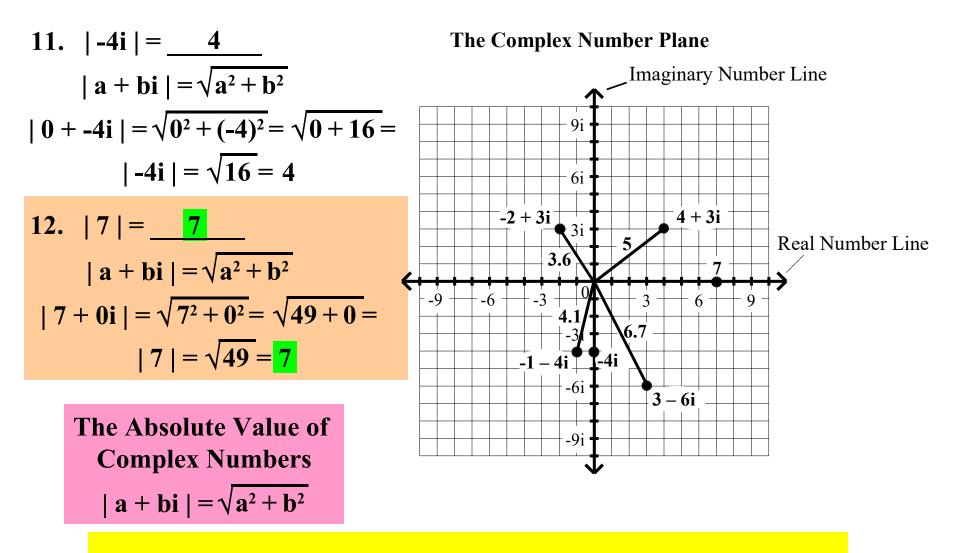


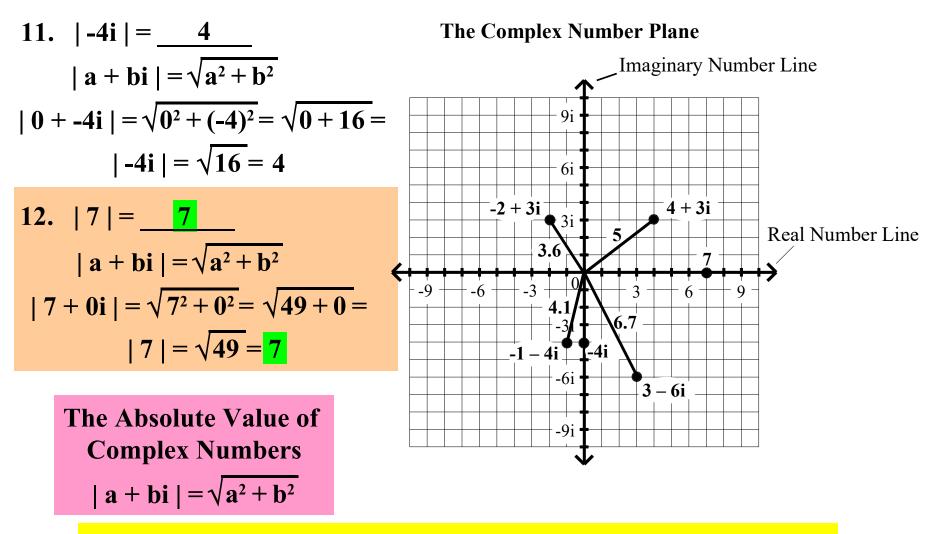




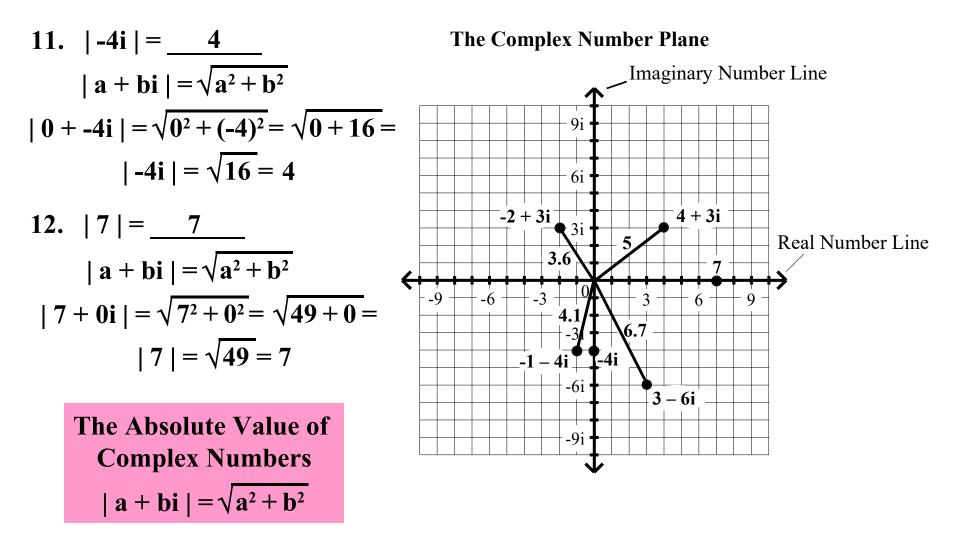








Of course, you don't <u>need</u> to use the formula to find the absolute value of any real number.



General Algebra II Class Worksheet #4 Unit 7 Find the additive inverse (opposite) of each of the following.

 13. 6 + 8i
 14. 3 - 7i
 15. -2 + i

 16. 9
 17. -3i
 18. -1 - i

General Algebra II Class Worksheet #4 Unit 7 Find the additive inverse (opposite) of each of the following.

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If k represents any <u>real</u> number,

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 18. -1 - i

If k represents any <u>real</u> number, the <u>additive inverse of k</u>,

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 14. 3 - 7i
 15. -2 + i

 16. 9
 17. -3i
 18. -1 - i

If k represents any <u>real</u> number, the <u>additive inverse of k</u>, -k

 13. 6 + 8i 14. 3 - 7i 15. -2 + i

 16. 9
 17. -3i 18. -1 - i

If k represents any <u>real</u> number, the <u>additive inverse of k</u>, -k = -1k.

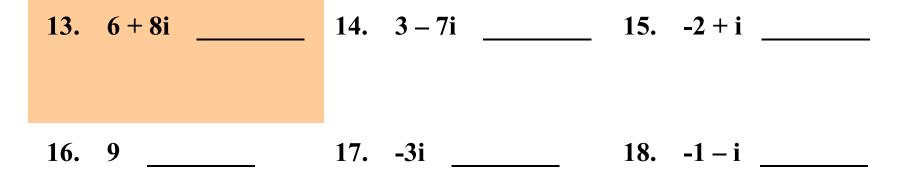
 13. 6 + 8i 14. 3 - 7i 15. -2 + i

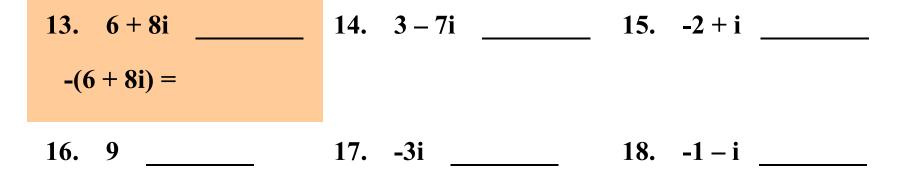
 16. 9
 17. -3i 18. -1 - i

If k represents any <u>real</u> number, the <u>additive inverse of k</u>, -k = -1k.

 13. 6 + 8i
 14. 3 - 7i
 15. -2 + i

 16. 9
 17. -3i
 18. -1 - i





 13. 6 + 8i 14. 3 - 7i 15. -2 + i

 -(6 + 8i) = -1(6 + 8i) 14. 3 - 7i 15. -2 + i

 16. 9
 17. -3i 18. -1 - i

 13. 6 + 8i -6
 14. 3 - 7i 15. -2 + i

 -(6 + 8i) = -1(6 + 8i)
 14. 3 - 7i 15. -2 + i

 16. 9
 17. -3i 18. -1 - i

 13. 6 + 8i -6 - 8i 14. 3 - 7i 15. -2 + i

 -(6 + 8i) = -1(6 + 8i) 14. 3 - 7i 15. -2 + i

 16. 9
 17. -3i 18. -1 - i

13.
$$6 + 8i$$
 $-6 - 8i$
 14. $3 - 7i$
 15. $-2 + i$
 $-(6 + 8i) = -1(6 + 8i)$
 14. $3 - 7i$
 15. $-2 + i$

 16. 9
 17. $-3i$
 18. $-1 - i$

13.
$$6 + 8i$$
 $-6 - 8i$
 14. $3 - 7i$
 15. $-2 + i$
 $-(6 + 8i) = -1(6 + 8i)$
 17. $-3i$
 18. $-1 - i$

13.
$$6 + 8i$$
 $-6 - 8i$
 14. $3 - 7i$
 15. $-2 + i$
 $-(6 + 8i) = -1(6 + 8i)$
 $-(3 - 7i) =$
 15. $-2 + i$

 16. 9
 17. $-3i$
 18. $-1 - i$

13.
$$6 + 8i$$
 $-6 - 8i$
 14. $3 - 7i$
 15. $-2 + i$
 $-(6 + 8i) = -1(6 + 8i)$
 $-(3 - 7i) = -1(3 - 7i)$
 15. $-2 + i$

 16. 9
 17. $-3i$
 18. $-1 - i$

13.
$$6 + 8i$$
 $-6 - 8i$
 14. $3 - 7i$
 -3
 15. $-2 + i$
 $-(6 + 8i) = -1(6 + 8i)$
 $-(3 - 7i) = -1(3 - 7i)$
 15. $-2 + i$

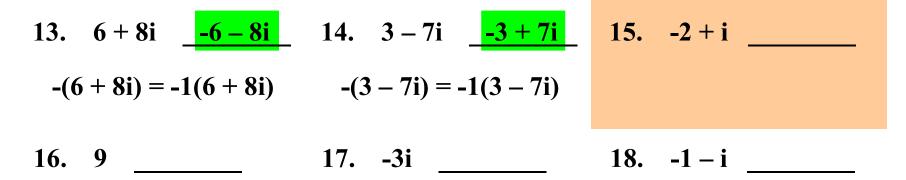
 16. 9
 17. $-3i$
 18. $-1 - i$

13.
$$6 + 8i$$
 $-6 - 8i$
 14. $3 - 7i$
 $-3 + 7i$
 15. $-2 + i$
 $-(6 + 8i) = -1(6 + 8i)$
 $-(3 - 7i) = -1(3 - 7i)$
 15. $-2 + i$

 16. 9
 17. $-3i$
 18. $-1 - i$

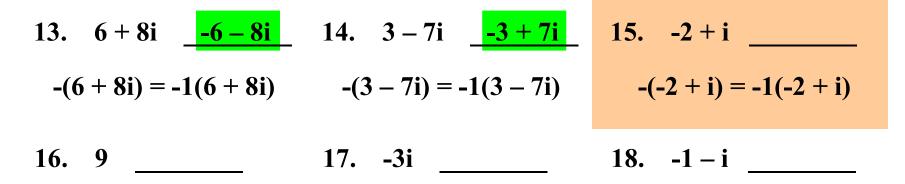
13.
$$6 + 8i$$
 $-6 - 8i$
 14. $3 - 7i$
 $-3 + 7i$
 15. $-2 + i$
 $-(6 + 8i) = -1(6 + 8i)$
 $-(3 - 7i) = -1(3 - 7i)$
 15. $-2 + i$

 16. 9
 17. $-3i$
 18. $-1 - i$



13.
$$6 + 8i$$
 $-6 - 8i$
 14. $3 - 7i$
 $-3 + 7i$
 15. $-2 + i$
 $-(6 + 8i) = -1(6 + 8i)$
 $-(3 - 7i) = -1(3 - 7i)$
 $-(-2 + i) =$

 16. 9
 17. $-3i$
 18. $-1 - i$

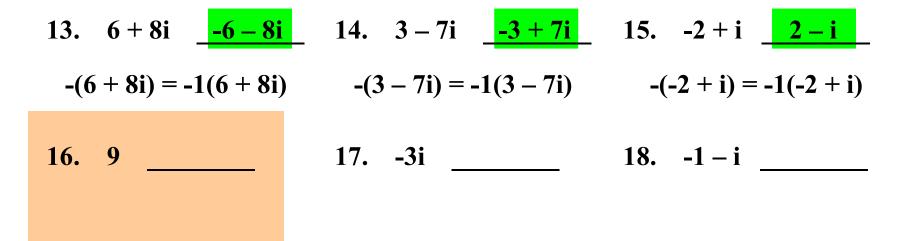


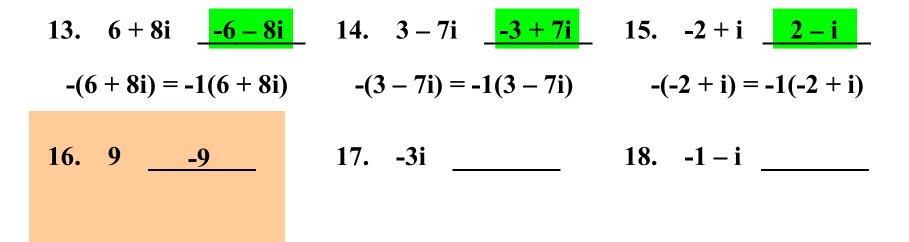
13. 6 + 8i <u>-6 - 8i</u>	14. 3 – 7i <u>-3 + 7i</u>	152 + i <u>2</u>
-(6+8i) = -1(6+8i)	-(3-7i) = -1(3-7i)	-(-2 + i) = -1(-2 + i)
16. 9	173i	181 – i

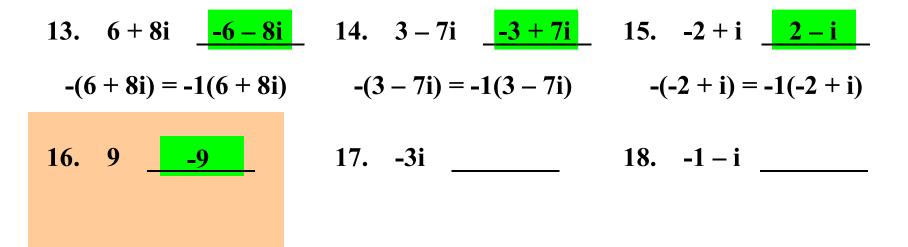
13. 6 + 8i <u>-6 - 8i</u>	14. 3 – 7i <u>-3 + 7i</u>	15. $-2 + i$ <u>2 - i</u>
-(6+8i) = -1(6+8i)	-(3-7i) = -1(3-7i)	-(-2 + i) = -1(-2 + i)
16. 9	173i	181 – i

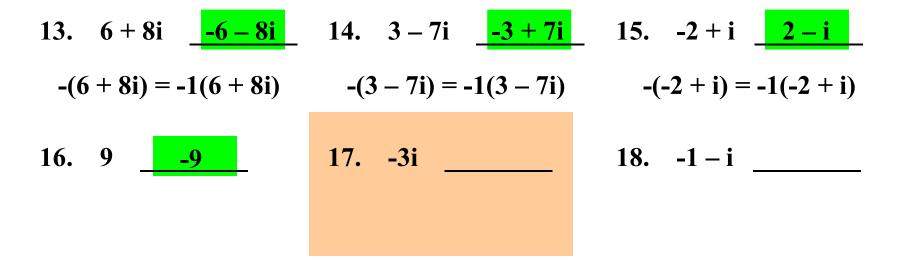
13.
$$6 + 8i$$
 $-6 - 8i$
 14. $3 - 7i$
 $-3 + 7i$
 15. $-2 + i$
 $2 - i$
 $-(6 + 8i) = -1(6 + 8i)$
 $-(3 - 7i) = -1(3 - 7i)$
 $-(-2 + i) = -1(-2 + i)$

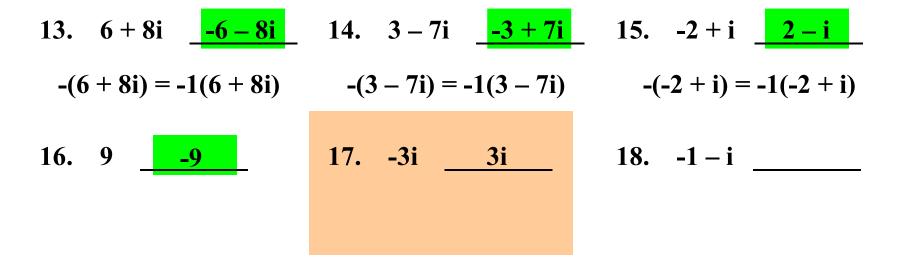
 16. 9
 17. $-3i$
 18. $-1 - i$

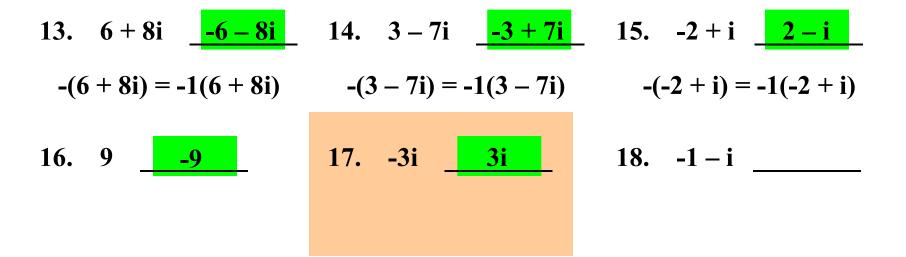


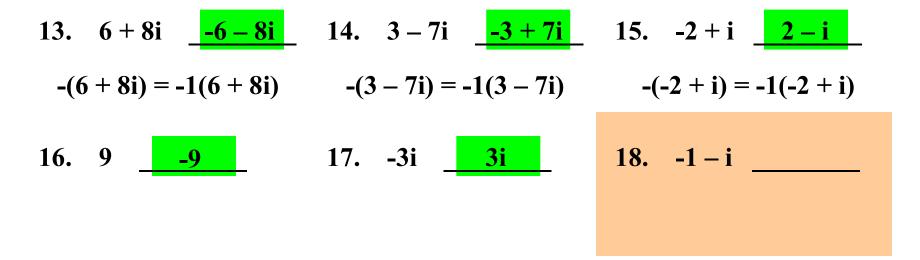


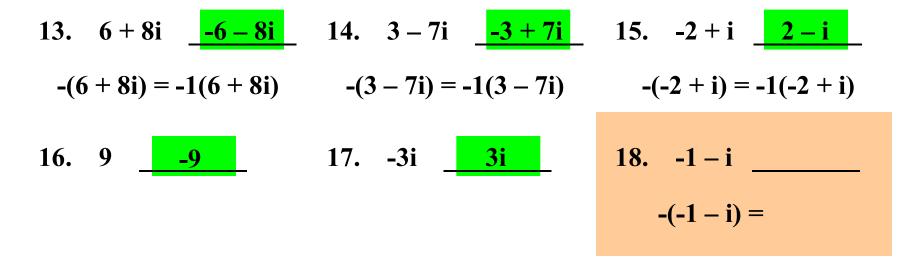


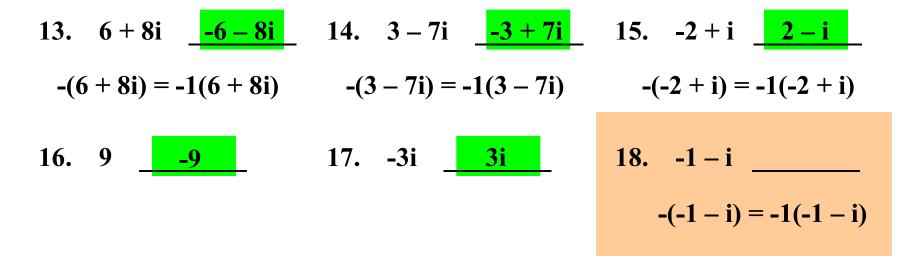


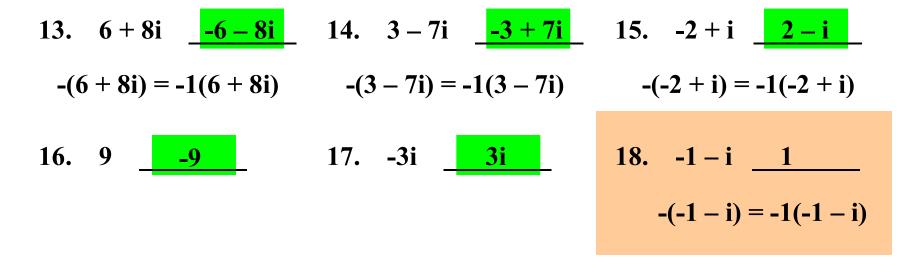


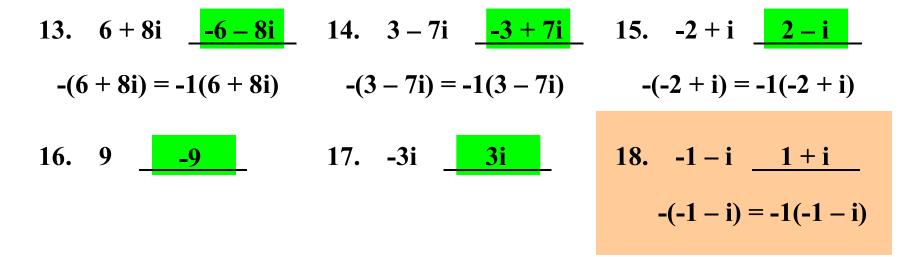


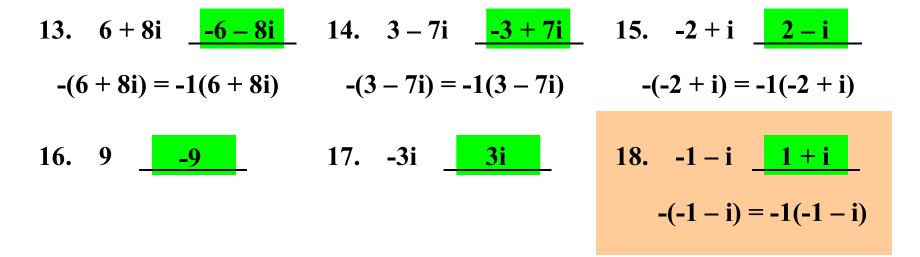


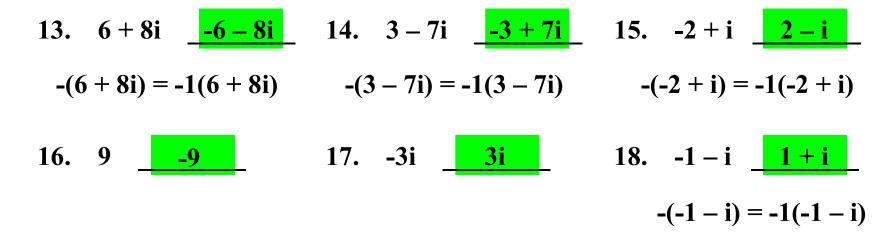












19. $(3+7i) + (5+2i) = ____ 20. (7-3i) + (-1+3i) = ____$

21. (-3-8i) + (4+i) = 22. (9-7i) + (-3-5i) =

19. (3+7i) + (5+2i) = 20. (7-3i) + (-1+3i) =

21. (-3-8i) + (4+i) = 22. (9-7i) + (-3-5i) =

19. (3+7i) + (5+2i) = 20. (7-3i) + (-1+3i) =

21. (-3-8i) + (4+i) = 22. (9-7i) + (-3-5i) =

When writing a complex number in $\underline{a + bi}$ form,

19. (3+7i) + (5+2i) = 20. (7-3i) + (-1+3i) =

21. (-3-8i) + (4+i) = 22. (9-7i) + (-3-5i) =

When writing a complex number in $\underline{a + bi}$ form, if \underline{b} is a negative number,

19. (3+7i) + (5+2i) = 20. (7-3i) + (-1+3i) =

21. (-3-8i) + (4+i) = 22. (9-7i) + (-3-5i) =

When writing a complex number in <u>a + bi</u> form, if <u>b</u> is a negative number, it is customary to avoid the double sign.

19. (3+7i) + (5+2i) = 20. (7-3i) + (-1+3i) =

21. (-3-8i) + (4+i) = 22. (9-7i) + (-3-5i) =

When writing a complex number in $\underline{a + bi}$ form, if \underline{b} is a negative number, it is customary to avoid the double sign. For example, 3 + -2i

19. (3+7i) + (5+2i) = 20. (7-3i) + (-1+3i) =

21. (-3-8i) + (4+i) = 22. (9-7i) + (-3-5i) =

When writing a complex number in $\underline{a + bi}$ form, if \underline{b} is a negative number, it is customary to avoid the double sign. For example, 3 + -2i is written as 3 - 2i.

19. $(3+7i) + (5+2i) = ____ 20. (7-3i) + (-1+3i) = ____$

21. (-3-8i) + (4+i) = 22. (9-7i) + (-3-5i) =

19. $(3+7i) + (5+2i) = ____ 20. (7-3i) + (-1+3i) = ____$

21. (-3-8i) + (4+i) = 22. (9-7i) + (-3-5i) =

When adding complex numbers,

19. (3+7i) + (5+2i) = 20. (7-3i) + (-1+3i) =

21. (-3-8i) + (4+i) = 22. (9-7i) + (-3-5i) =

When adding complex numbers, treat the number i like a variable

19. $(3+7i) + (5+2i) = ____ 20. (7-3i) + (-1+3i) = ____$

21. (-3-8i) + (4+i) = 22. (9-7i) + (-3-5i) =

19.
$$(3 + 7i) + (5 + 2i) =$$
 20. $(7 - 3i) + (-1 + 3i) =$ 21. $(-3 - 8i) + (4 + i) =$ 22. $(9 - 7i) + (-3 - 5i) =$ 22.

19.
$$(3 + 7i) + (5 + 2i) =$$
 20. $(7 - 3i) + (-1 + 3i) =$ 21. $(-3 - 8i) + (4 + i) =$ 22. $(9 - 7i) + (-3 - 5i) =$ 22.

19.
$$(3 + 7i) + (5 + 2i) = 8$$

20. $(7 - 3i) + (-1 + 3i) =$
21. $(-3 - 8i) + (4 + i) =$
22. $(9 - 7i) + (-3 - 5i) =$

19.
$$(3 + 7i) + (5 + 2i) = \underline{8}$$

19. $(7 - 3i) + (-1 + 3i) = \underline{21}$
20. $(7 - 3i) + (-1 + 3i) = \underline{21}$
21. $(-3 - 8i) + (4 + i) = \underline{22}$
22. $(9 - 7i) + (-3 - 5i) = \underline{22}$

19.
$$(3 + 7i) + (5 + 2i) = 8 + 9i$$

 \uparrow \uparrow \uparrow $20. (7 - 3i) + (-1 + 3i) =$
21. $(-3 - 8i) + (4 + i) =$
22. $(9 - 7i) + (-3 - 5i) =$

19.
$$(3 + 7i) + (5 + 2i) = 8 + 9i$$

20. $(7 - 3i) + (-1 + 3i) =$
21. $(-3 - 8i) + (4 + i) =$
22. $(9 - 7i) + (-3 - 5i) =$

19.
$$(3+7i) + (5+2i) = 8+9i$$

20. $(7-3i) + (-1+3i) = 21.$
21. $(-3-8i) + (4+i) = 22.$ $(9-7i) + (-3-5i) = 22.$

19.
$$(3 + 7i) + (5 + 2i) =$$

 $19. (3 + 7i) + (5 + 2i) =$
 $19. (7 - 3i) + (-1 + 3i) =$
 $19. (7 - 3i) + (-1 + 3i) =$
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 $19. (7 - 3i) + (-1 + 3i) =$
 $19. (7 - 3i) + (-1 + 3i) =$
 $19. (7 - 3i) + (-1 + 3i) =$

19.
$$(3+7i) + (5+2i) = \underline{8+9i}$$

20. $(7-3i) + (-1+3i) = \underline{6}$
11. $(-3-8i) + (4+i) = \underline{22}$
22. $(9-7i) + (-3-5i) = \underline{22}$

19.
$$(3+7i) + (5+2i) =$$

 $8+9i$
20. $(7-3i) + (-1+3i) =$
 1
 1
21. $(-3-8i) + (4+i) =$
22. $(9-7i) + (-3-5i) =$

19.
$$(3 + 7i) + (5 + 2i) =$$

 $8 + 9i$
20. $(7 - 3i) + (-1 + 3i) =$
 $6 + 0i$
 1
21. $(-3 - 8i) + (4 + i) =$
22. $(9 - 7i) + (-3 - 5i) =$

19.
$$(3 + 7i) + (5 + 2i) = \underline{8 + 9i}$$

20. $(7 - 3i) + (-1 + 3i) = \underline{6}$
21. $(-3 - 8i) + (4 + i) = 22$. $(9 - 7i) + (-3 - 5i) = 22$

19.
$$(3 + 7i) + (5 + 2i) = 8 + 9i$$

20. $(7 - 3i) + (-1 + 3i) = 6$
21. $(-3 - 8i) + (4 + i) = 22$
22. $(9 - 7i) + (-3 - 5i) =$

19.
$$(3 + 7i) + (5 + 2i) = \underline{8 + 9i}$$

20. $(7 - 3i) + (-1 + 3i) = \underline{6}$
21. $(-3 - 8i) + (4 + i) = \underline{22}$. $(9 - 7i) + (-3 - 5i) = \underline{22}$

19.
$$(3 + 7i) + (5 + 2i) = \underline{8 + 9i}$$

20. $(7 - 3i) + (-1 + 3i) = \underline{6}$
21. $(-3 - 8i) + (4 + i) = \underline{1}$
22. $(9 - 7i) + (-3 - 5i) = \underline{-1}$

19.
$$(3 + 7i) + (5 + 2i) = \underline{8 + 9i}$$
 20. $(7 - 3i) + (-1 + 3i) = \underline{6}$
21. $(-3 - 8i) + (4 + i) = \underline{1}$ 22. $(9 - 7i) + (-3 - 5i) = \underline{-1}$

19. $(3 + 7i) + (5 + 2i) = \underline{8 + 9i}$ 20. $(7 - 3i) + (-1 + 3i) = \underline{6}$ 21. $(-3 - 8i) + (4 + i) = \underline{1 - 7i}$ 22. $(9 - 7i) + (-3 - 5i) = \underline{-7i}$

19. $(3 + 7i) + (5 + 2i) = \underline{8 + 9i}$ 20. $(7 - 3i) + (-1 + 3i) = \underline{6}$ 21. $(-3 - 8i) + (4 + i) = \underline{1 - 7i}$ 22. $(9 - 7i) + (-3 - 5i) = \underline{--1}$

19.
$$(3 + 7i) + (5 + 2i) = \underline{8 + 9i}$$
 20. $(7 - 3i) + (-1 + 3i) = \underline{6}$
21. $(-3 - 8i) + (4 + i) = \underline{1 - 7i}$ 22. $(9 - 7i) + (-3 - 5i) = \underline{1 - 7i}$

19.
$$(3 + 7i) + (5 + 2i) = \underline{8 + 9i}$$
 20. $(7 - 3i) + (-1 + 3i) = \underline{6}$
21. $(-3 - 8i) + (4 + i) = \underline{1 - 7i}$ 22. $(9 - 7i) + (-3 - 5i) = \underline{1 - 7i}$

19.
$$(3 + 7i) + (5 + 2i) = \underline{8 + 9i}$$
 20. $(7 - 3i) + (-1 + 3i) = \underline{6}$
21. $(-3 - 8i) + (4 + i) = \underline{1 - 7i}$ 22. $(9 - 7i) + (-3 - 5i) = \underline{6}$
 \uparrow \uparrow \uparrow

19.
$$(3 + 7i) + (5 + 2i) = \underline{8 + 9i}$$
 20. $(7 - 3i) + (-1 + 3i) = \underline{6}$
21. $(-3 - 8i) + (4 + i) = \underline{1 - 7i}$ 22. $(9 - 7i) + (-3 - 5i) = \underline{6}$

19.
$$(3 + 7i) + (5 + 2i) = \underline{8 + 9i}$$

20. $(7 - 3i) + (-1 + 3i) = \underline{6}$
21. $(-3 - 8i) + (4 + i) = \underline{1 - 7i}$
22. $(9 - 7i) + (-3 - 5i) = \underline{6 - 12i}$
 \uparrow

19.
$$(3 + 7i) + (5 + 2i) = \underline{8 + 9i}$$
 20. $(7 - 3i) + (-1 + 3i) = \underline{6}$
21. $(-3 - 8i) + (4 + i) = \underline{1 - 7i}$ 22. $(9 - 7i) + (-3 - 5i) = \underline{6 - 12i}$

19. $(3+7i) + (5+2i) = \underline{8+9i}$ 20. $(7-3i) + (-1+3i) = \underline{6}$ 21. $(-3-8i) + (4+i) = \underline{1-7i}$ 22. $(9-7i) + (-3-5i) = \underline{6-12i}$

23. (2+8i) - (5+3i) = 24. (8+3i) - (5+6i) =_____

25. $(5-i) - (5-7i) = _____ 26. (4-6i) - (-8+5i) = _____$

23. (2+8i) - (5+3i) = 24. (8+3i) - (5+6i) =

25. $(5-i) - (5-7i) = _____ 26. (4-6i) - (-8+5i) = _____$

When subtracting complex numbers,

23. (2+8i) - (5+3i) = 24. (8+3i) - (5+6i) =

25. $(5-i) - (5-7i) = _____ 26. (4-6i) - (-8+5i) = _____$

When subtracting complex numbers, change the subtraction to addition.

23. (2+8i) - (5+3i) = 24. (8+3i) - (5+6i) =_____

25. $(5-i) - (5-7i) = _____ 26. (4-6i) - (-8+5i) = _____$

23.
$$(2 + 8i) - (5 + 3i) =$$
_____ 24. $(8 + 3i) - (5 + 6i) =$ _____
25. $(5 - i) - (5 - 7i) =$ _____ 26. $(4 - 6i) - (-8 + 5i) =$ _____

23.
$$(2 + 8i) - (5 + 3i) =$$
 _____ 24. $(8 + 3i) - (5 + 6i) =$ _____
= $(2 + 8i)$
25. $(5 - i) - (5 - 7i) =$ _____ 26. $(4 - 6i) - (-8 + 5i) =$ _____

23.
$$(2 + 8i) - (5 + 3i) =$$
 _____ 24. $(8 + 3i) - (5 + 6i) =$ _____
= $(2 + 8i) +$ 25. $(5 - i) - (5 - 7i) =$ _____ 26. $(4 - 6i) - (-8 + 5i) =$ _____

23.
$$(2 + 8i) - (5 + 3i) =$$
 _____ 24. $(8 + 3i) - (5 + 6i) =$ _____
= $(2 + 8i) + (-5 - 3i)$ 25. $(5 - i) - (5 - 7i) =$ _____ 26. $(4 - 6i) - (-8 + 5i) =$ _____

23.
$$(2 + 8i) - (5 + 3i) =$$
 24. $(8 + 3i) - (5 + 6i) =$ _____
= $(2 + 8i) + (-5 - 3i) =$ 26. $(4 - 6i) - (-8 + 5i) =$ _____

23.
$$(2 + 8i) - (5 + 3i) =$$

= $(2 + 8i) + (-5 - 3i) =$
1 1 1 1 24. $(8 + 3i) - (5 + 6i) =$

25. $(5-i) - (5-7i) = _____ 26. (4-6i) - (-8+5i) = _____$

25. $(5-i) - (5-7i) = _____ 26. (4-6i) - (-8+5i) = _____$

23.
$$(2 + 8i) - (5 + 3i) = __{-3}$$

= $(2 + 8i) + (-5 - 3i) =$
 \uparrow \uparrow \uparrow
25. $(5 - i) - (5 - 7i) = __{-3}$
26. $(4 - 6i) - (-8 + 5i) = __{-3}$

23.
$$(2 + 8i) - (5 + 3i) = \underline{-3 + 5i}$$

= $(2 + 8i) + (-5 - 3i) = \underline{1}$
24. $(8 + 3i) - (5 + 6i) = \underline{-3 + 5i}$
= $(2 + 8i) + (-5 - 3i) = \underline{1}$
25. $(5 - i) - (5 - 7i) = \underline{-3 + 5i}$
26. $(4 - 6i) - (-8 + 5i) = \underline{-3 + 5i}$

23.
$$(2 + 8i) - (5 + 3i) = _ -3 + 5i$$

= $(2 + 8i) + (-5 - 3i) =$
24. $(8 + 3i) - (5 + 6i) = _$
25. $(5 - i) - (5 - 7i) = _$
26. $(4 - 6i) - (-8 + 5i) = _$

23.
$$(2+8i) - (5+3i) = \underline{-3+5i}$$

= $(2+8i) + (-5-3i) =$
24. $(8+3i) - (5+6i) = \underline{-3+6i}$

25. $(5-i) - (5-7i) = _____ 26. (4-6i) - (-8+5i) = _____$

23.
$$(2+8i) - (5+3i) = \underline{-3+5i}$$

= $(2+8i) + (-5-3i) =$
24. $(8+3i) - (5+6i) = \underline{-3+5i}$
= $(8+3i)$

25. $(5-i) - (5-7i) = _____ 26. (4-6i) - (-8+5i) = _____$

23.
$$(2+8i) - (5+3i) = \underline{-3+5i}$$

= $(2+8i) + (-5-3i) =$
24. $(8+3i) - (5+6i) = \underline{-3+6i}$
= $(8+3i) +$

25.
$$(5-i) - (5-7i) = _____ 26. (4-6i) - (-8+5i) = _____$$

25. (5-i) - (5-7i) = 26. (4-6i) - (-8+5i) =

23.
$$(2+8i) - (5+3i) = _-3+5i$$

= $(2+8i) + (-5-3i) = = [(8+3i) + (-5-6i) =]$
25. $(5-i) - (5-7i) = _-26. (4-6i) - (-8+5i) = _-26.$

23.
$$(2+8i) - (5+3i) = _-3+5i$$

= $(2+8i) + (-5-3i) =$
24. $(8+3i) - (5+6i) = _3$
= $(8+3i) + (-5-6i) =$
 \uparrow
25. $(5-i) - (5-7i) = _$
26. $(4-6i) - (-8+5i) = _$

23.
$$(2+8i) - (5+3i) = _-3+5i$$

= $(2+8i) + (-5-3i) =$
24. $(8+3i) - (5+6i) = _3$
= $(8+3i) + (-5-6i) =$
1
25. $(5-i) - (5-7i) = _$
26. $(4-6i) - (-8+5i) = _$

23.
$$(2+8i) - (5+3i) = \underline{-3+5i}$$

= $(2+8i) + (-5-3i) =$
24. $(8+3i) - (5+6i) = \underline{3-3i}$
= $(8+3i) + (-5-6i) =$
 1
25. $(5-i) - (5-7i) =$
26. $(4-6i) - (-8+5i) =$

23.
$$(2+8i) - (5+3i) = \underline{-3+5i}$$

= $(2+8i) + (-5-3i) = 24$. $(8+3i) - (5+6i) = \underline{3-3i}$
= $(8+3i) + (-5-6i) =$

25.
$$(5-i) - (5-7i) = 26. (4-6i) - (-8+5i) =$$

23.
$$(2+8i) - (5+3i) = -3+5i$$

= $(2+8i) + (-5-3i) = -3+5i$
= $(8+3i) - (5+6i) = -3-3i$
= $(8+3i) + (-5-6i) = -3-3i$

25.
$$(5-i) - (5-7i) =$$

26.
$$(4-6i) - (-8+5i) =$$

23.
$$(2+8i) - (5+3i) = -3+5i$$

= $(2+8i) + (-5-3i) = -3+5i$
= $(8+3i) - (5+6i) = -3-3i$
= $(8+3i) + (-5-6i) = -3-3i$

25.
$$(5-i) - (5-7i) =$$

= $(5-i)$

26.
$$(4-6i) - (-8+5i) =$$

23.
$$(2+8i) - (5+3i) = -3+5i$$

= $(2+8i) + (-5-3i) = -3+5i$
= $(8+3i) - (5+6i) = -3-3i$
= $(8+3i) + (-5-6i) = -3-3i$

25.
$$(5-i) - (5-7i) =$$

= $(5-i) +$

26.
$$(4-6i) - (-8+5i) =$$

23.
$$(2+8i) - (5+3i) = \underline{-3+5i}$$

= $(2+8i) + (-5-3i) = 24$. $(8+3i) - (5+6i) = \underline{3-3i}$
= $(8+3i) + (-5-6i) =$

25.
$$(5-i) - (5-7i) =$$

= $(5-i) + (-5+7i)$

26.
$$(4-6i) - (-8+5i) =$$

23.
$$(2+8i) - (5+3i) = \underline{-3+5i}$$

= $(2+8i) + (-5-3i) = 24$. $(8+3i) - (5+6i) = \underline{3-3i}$
= $(8+3i) + (-5-6i) =$

25.
$$(5-i) - (5-7i) =$$

= $(5-i) + (-5+7i) =$

26.
$$(4-6i) - (-8+5i) =$$

23.
$$(2+8i) - (5+3i) = \underline{-3+5i}$$

= $(2+8i) + (-5-3i) = 24$. $(8+3i) - (5+6i) = \underline{3-3i}$
= $(8+3i) + (-5-6i) =$

25.
$$(5-i) - (5-7i) = 0$$

= $(5-i) + (-5+7i) =$

26.
$$(4-6i) - (-8+5i) =$$

23.
$$(2+8i) - (5+3i) = \underline{-3+5i}$$

= $(2+8i) + (-5-3i) = 24$. $(8+3i) - (5+6i) = \underline{3-3i}$
= $(8+3i) + (-5-6i) =$

25.
$$(5-i) - (5-7i) = 0$$

= $(5-i) + (-5+7i) =$

26.
$$(4-6i) - (-8+5i) =$$

23.
$$(2+8i) - (5+3i) = -3+5i$$

= $(2+8i) + (-5-3i) = -3+5i$
= $(8+3i) - (5+6i) = -3-3i$
= $(8+3i) + (-5-6i) = -3-3i$

25.
$$(5-i) - (5-7i) = 0 + 6i$$

= $(5-i) + (-5+7i) =$

26.
$$(4-6i) - (-8+5i) =$$

23.
$$(2+8i) - (5+3i) = \underline{-3+5i}$$

= $(2+8i) + (-5-3i) = 24$. $(8+3i) - (5+6i) = \underline{3-3i}$
= $(8+3i) + (-5-6i) =$

25.
$$(5-i) - (5-7i) = 6i$$

= $(5-i) + (-5+7i) =$

26.
$$(4-6i) - (-8+5i) =$$

23.
$$(2+8i) - (5+3i) = \underline{-3+5i}$$

= $(2+8i) + (-5-3i) = \underline{-3+5i}$
= $(8+3i) - (5+6i) = \underline{-3-3i}$
= $(8+3i) + (-5-6i) =$

25.
$$(5-i) - (5-7i) = 6i$$

= $(5-i) + (-5+7i) =$

26.
$$(4-6i) - (-8+5i) =$$

23.
$$(2+8i) - (5+3i) = \underline{-3+5i}$$

= $(2+8i) + (-5-3i) = \underline{-3+5i}$
= $(8+3i) - (5+6i) = \underline{-3-3i}$
= $(8+3i) + (-5-6i) =$

25.
$$(5-i) - (5-7i) = _____{6i}$$

= $(5-i) + (-5+7i) = _______{6i}$
= $(4-6i)$

23.
$$(2+8i) - (5+3i) = \underline{-3+5i}$$

= $(2+8i) + (-5-3i) = \underline{-3+5i}$
= $(8+3i) - (5+6i) = \underline{-3-3i}$
= $(8+3i) + (-5-6i) =$

25.
$$(5-i) - (5-7i) = _____{6i}$$

= $(5-i) + (-5+7i) = ______{6i}$
26. $(4-6i) - (-8+5i) = _______{6i}$
= $(4-6i) + _____{6i}$

23.
$$(2+8i) - (5+3i) = \underline{-3+5i}$$

= $(2+8i) + (-5-3i) = \underline{-3+5i}$
= $(8+3i) - (5+6i) = \underline{-3-3i}$
= $(8+3i) + (-5-6i) =$

25.
$$(5-i) - (5-7i) = ____6i$$

= $(5-i) + (-5+7i) = ____(4-6i) - (-8+5i) = _____= $(4-6i) + (8-5i)$$

23.
$$(2+8i) - (5+3i) = \underline{-3+5i}$$

= $(2+8i) + (-5-3i) = \underline{-3+5i}$
= $(8+3i) - (5+6i) = \underline{-3-3i}$
= $(8+3i) + (-5-6i) =$

25.
$$(5-i) - (5-7i) =$$
 6i
= $(5-i) + (-5+7i) =$ 26. $(4-6i) - (-8+5i) =$
= $(4-6i) + (8-5i) =$

23.
$$(2+8i) - (5+3i) = \underline{-3+5i}$$

= $(2+8i) + (-5-3i) = \underline{-3+5i}$
= $(8+3i) - (5+6i) = \underline{-3-3i}$
= $(8+3i) + (-5-6i) =$

25.
$$(5-i) - (5-7i) =$$
 6i
= $(5-i) + (-5+7i) =$ 26. $(4-6i) - (-8+5i) =$ 12
= $(4-6i) + (8-5i) =$

23.
$$(2+8i) - (5+3i) = \underline{-3+5i}$$

= $(2+8i) + (-5-3i) = \underline{-3+5i}$
= $(8+3i) - (5+6i) = \underline{-3-3i}$
= $(8+3i) + (-5-6i) =$

25.
$$(5-i) - (5-7i) = \underline{6i}$$

= $(5-i) + (-5+7i) = \frac{6i}{26}$
= $(4-6i) - (-8+5i) = \underline{12}$
= $(4-6i) + (8-5i) = \underline{12}$

23.
$$(2+8i) - (5+3i) = \underline{-3+5i}$$

= $(2+8i) + (-5-3i) = \underline{-3+5i}$
= $(8+3i) - (5+6i) = \underline{-3-3i}$
= $(8+3i) + (-5-6i) =$

25.
$$(5-i) - (5-7i) = \underline{6i}$$

= $(5-i) + (-5+7i) = \underline{6i}$
= $(4-6i) - (-8+5i) = \underline{12-11i}$
= $(4-6i) + (8-5i) = \underline{6i}$

23.
$$(2+8i) - (5+3i) = \underline{-3+5i}$$

= $(2+8i) + (-5-3i) = \underline{-3+5i}$
= $(8+3i) - (5+6i) = \underline{-3-3i}$
= $(8+3i) + (-5-6i) = \underline{-3-3i}$

25.
$$(5-i) - (5-7i) =$$
 6i
= $(5-i) + (-5+7i) =$ 26. $(4-6i) - (-8+5i) =$ 12-11i
= $(4-6i) + (8-5i) =$

23.
$$(2+8i) - (5+3i) = -3+5i$$

= $(2+8i) + (-5-3i) = -3+5i$
= $(8+3i) - (5+6i) = -3-3i$
= $(8+3i) + (-5-6i) = -3-3i$

25.
$$(5-i) - (5-7i) = ____6i$$

= $(5-i) + (-5+7i) = ____26.$ $(4-6i) - (-8+5i) = ____12-11i$
= $(4-6i) + (8-5i) = ____26.$

27. 5(3+2i) =_____ 28. -3(4-7i) =_____

29. $2i(2+3i) = ____ 30. -5i(6+4i) = ____$

27. 5(3+2i) =_____ 28. -3(4-7i) =_____

29. $2i(2+3i) = ____ 30. -5i(6+4i) = ____$

When multiplying complex numbers,

27. 5(3+2i) =_____ 28. -3(4-7i) =_____

29. $2i(2+3i) = ____ 30. -5i(6+4i) = ____$

When multiplying complex numbers, first treat the <u>number i</u> like a variable.

27. 5(3+2i) =_____ 28. -3(4-7i) =_____

29. $2i(2+3i) = ____ 30. -5i(6+4i) = ____$

When multiplying complex numbers, first treat the <u>number i</u> like a variable. Second, remember that i is not a variable.

27. 5(3+2i) =_____ 28. -3(4-7i) =_____

29. $2i(2+3i) = ____ 30. -5i(6+4i) = ____$

When multiplying complex numbers, first treat the <u>number i</u> like a variable. Second, remember that i is not a variable. If you get i² as part of your answer,

27. 5(3+2i) = 28. -3(4-7i) =

29. $2i(2+3i) = ____ 30. -5i(6+4i) = ____$

27. 5(3+2i) =_____ 28. -3(4-7i) =_____

29. $2i(2+3i) = ____ 30. -5i(6+4i) = ____$

27. 5(3+2i) =_____ 28. -3(4-7i) =_____

29. $2i(2+3i) = ____ 30. -5i(6+4i) = ____$

27. 5(3+2i) =_____ 28. -3(4-7i) =_____

29. 2i(2+3i) = 30. -5i(6+4i) =

27. 5(3+2i) =_____ 28. -3(4-7i) =_____

29. $2i(2+3i) = ____ 30. -5i(6+4i) = ____$

27. 5(3 + 2i) = 28. -3(4 - 7i) =

29. 2i(2+3i) = 30. -5i(6+4i) =

27.
$$5(3 + 2i) =$$
_____ 28. $-3(4 - 7i) =$ _____

29. 2i(2+3i) = 30. -5i(6+4i) =

27.
$$5(3 + 2i) = 15$$
 28. $-3(4 - 7i) =$

29. 2i(2+3i) = 30. -5i(6+4i) =

27.
$$5(3+2i) = 15$$
 28. $-3(4-7i) =$

29. $2i(2+3i) = ____ 30. -5i(6+4i) = ____$

27.
$$5(3+2i) = 15+10i$$

$$28. -3(4-7i) = _$$

29. $2i(2+3i) = ____ 30. -5i(6+4i) = ____$

27. 5(3+2i) = 15+10i

28.
$$-3(4-7i) =$$

29. $2i(2+3i) = ____ 30. -5i(6+4i) = ____$

27.
$$5(3+2i) = 15+10i$$
 28. $-3(4-7i) = _____$

29. $2i(2+3i) = ____ 30. -5i(6+4i) = ____$

27.
$$5(3+2i) = 15+10i$$

28. $-3(4-7i) = 15+10i$

29. $2i(2+3i) = ____ 30. -5i(6+4i) = ____$

27.
$$5(3+2i) = 15+10i$$

28. $-3(4-7i) = -12$

29. $2i(2+3i) = ____ 30. -5i(6+4i) = ____$

27.
$$5(3+2i) = 15+10i$$
 28. $-3(4-7i) = -12$

29. $2i(2+3i) = ____ 30. -5i(6+4i) = ____$

27.
$$5(3+2i) = 15+10i$$

28. $-3(4-7i) = -12+21i$

29. $2i(2+3i) = ____ 30. -5i(6+4i) = ____$

27.
$$5(3+2i) = 15+10i$$
 28. $-3(4-7i) = -12+21i$

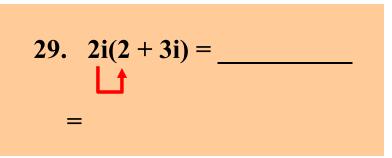
29. $2i(2+3i) = _____ 30. -5i(6+4i) = _____$

27.
$$5(3+2i) = 15+10i$$
 28. $-3(4-7i) = -12+21i$

29. 2i(2+3i) =_____

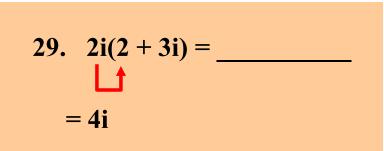
30.
$$-5i(6 + 4i) =$$

27.
$$5(3+2i) = 15+10i$$
 28. $-3(4-7i) = -12+21i$



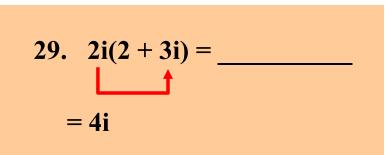
30.
$$-5i(6 + 4i) =$$

27.
$$5(3+2i) = 15+10i$$
 28. $-3(4-7i) = -12+21i$



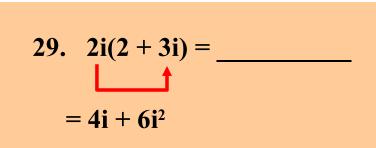
30.
$$-5i(6 + 4i) =$$

27.
$$5(3+2i) = 15+10i$$
 28. $-3(4-7i) = -12+21i$



30.
$$-5i(6 + 4i) =$$

27.
$$5(3+2i) = 15+10i$$
 28. $-3(4-7i) = -12+21i$



30.
$$-5i(6 + 4i) =$$

27.
$$5(3+2i) = 15+10i$$
 28. $-3(4-7i) = -12+21i$

29.
$$2i(2+3i) =$$

= $4i + 6i^2 =$

30.
$$-5i(6+4i) =$$

27.
$$5(3+2i) = 15+10i$$
 28. $-3(4-7i) = -12+21i$

29. 2i(2 + 3i) == $4i + 6i^2 = 4i$

30.
$$-5i(6 + 4i) =$$

27.
$$5(3+2i) = 15+10i$$
 28. $-3(4-7i) = -12+21i$

29. 2i(2 + 3i) =_____ = $4i + 6i^2 = 4i$

30.
$$-5i(6 + 4i) =$$

27.
$$5(3+2i) = 15+10i$$
 28. $-3(4-7i) = -12+21i$

29. 2i(2 + 3i) =______ = $4i + 6i^2 = 4i - 6$

30.
$$-5i(6 + 4i) =$$

27.
$$5(3+2i) = 15+10i$$
 28. $-3(4-7i) = -12+21i$

29. 2i(2 + 3i) =_____ = $4i + 6i^2 = 4i - 6 =$

30.
$$-5i(6 + 4i) =$$

27.
$$5(3+2i) = 15+10i$$
 28. $-3(4-7i) = -12+21i$

29.
$$2i(2+3i) = -6$$

30.
$$-5i(6 + 4i) =$$

 $= 4i + 6i^2 = 4i - 6 =$

27.
$$5(3+2i) = 15+10i$$
 28. $-3(4-7i) = -12+21i$

29.
$$2i(2 + 3i) = -6 + 4i$$

= $4i + 6i^2 = 4i - 6 =$

30.
$$-5i(6+4i) =$$

27.
$$5(3+2i) = 15+10i$$
 28. $-3(4-7i) = -12+21i$

29.
$$2i(2 + 3i) = -6 + 4i$$

= $4i + 6i^2 = 4i - 6 =$

30.
$$-5i(6 + 4i) =$$

27.
$$5(3+2i) = 15+10i$$
 28. $-3(4-7i) = -12+21i$

29. 2i(2+3i) = -6+4i

 $= 4i + 6i^2 = 4i - 6 =$

27.
$$5(3+2i) = 15+10i$$
 28. $-3(4-7i) = -12+21i$

29. 2i(2+3i) = -6+4i

 $= 4i + 6i^2 = 4i - 6 =$

30.
$$-5i(6 + 4i) =$$

27.
$$5(3+2i) = 15+10i$$
 28. $-3(4-7i) = -12+21i$

29. 2i(2 + 3i) = -6 + 4i= $4i + 6i^2 = 4i - 6 = -5$

30.
$$-5i(6 + 4i) =$$

= -30i

27.
$$5(3+2i) = 15+10i$$
 28. $-3(4-7i) = -12+21i$

29. 2i(2 + 3i) = -6 + 4i= $4i + 6i^2 = 4i - 6 =$

30.
$$-5i(6 + 4i) =$$

= -30i

27.
$$5(3+2i) = 15+10i$$
 28. $-3(4-7i) = -12+21i$

29. 2i(2 + 3i) = -6 + 4i= $4i + 6i^2 = 4i - 6 =$

30.
$$-5i(6 + 4i) =$$

= $-30i - 20i^2$

27.
$$5(3+2i) = 15+10i$$
 28. $-3(4-7i) = -12+21i$

29. 2i(2+3i) = -6+4i= $4i + 6i^2 = 4i - 6 =$ = $-30i - 20i^2 =$

27.
$$5(3+2i) = 15+10i$$
 28. $-3(4-7i) = -12+21i$

29. 2i(2+3i) = -6+4i= $4i + 6i^2 = 4i - 6 =$ = $-30i - 20i^2 = -30i$

27.
$$5(3+2i) = 15+10i$$
 28. $-3(4-7i) = -12+21i$

29. 2i(2+3i) = -6+4i= $4i + 6i^2 = 4i - 6 =$ = $-30i - 20i^2 = -30i$

27.
$$5(3+2i) = 15+10i$$
 28. $-3(4-7i) = -12+21i$

29. 2i(2+3i) = -6+4i= $4i + 6i^2 = 4i - 6 =$ = $-30i - 20i^2 = -30i + 20$

27.
$$5(3+2i) = 15+10i$$
 28. $-3(4-7i) = -12+21i$

29. 2i(2+3i) = -6+4i= $4i + 6i^2 = 4i - 6 =$ = $-30i - 20i^2 = -30i + 20 =$

27.
$$5(3+2i) = 15+10i$$
 28. $-3(4-7i) = -12+21i$

29. 2i(2+3i) = -6+4i= $4i + 6i^2 = 4i - 6 =$ 30. -5i(6+4i) = 20= $-30i - 20i^2 = -30i + 20 =$

27.
$$5(3 + 2i) = 15 + 10i$$

28. $-3(4 - 7i) = -12 + 21i$
29. $2i(2 + 3i) = -6 + 4i$
30. $-5i(6 + 4i) = 20 - 30i$

$= 4i + 6i^2 = 4i - 6 =$	$= -30i - 20i^2 = -30i - 20i - 20i^2 = -30i - 20i $

When multiplying complex numbers, first treat the <u>number i</u> like a variable. Second, remember that i is not a variable. If you get i² as part of your answer, replace it with -1. Note: since $i = \sqrt{-1}$, $i^2 = -1$.

-30i + 20 =

27.
$$5(3 + 2i) = 15 + 10i$$

28. $-3(4 - 7i) = -12 + 21i$
29. $2i(2 + 3i) = -6 + 4i$
30. $-5i(6 + 4i) = 20 - 30i$

 $= 4i + 6i^2 = 4i - 6 = = -30i - 20i^2 = -30i + 20 =$

27.
$$5(3 + 2i) = 15 + 10i$$

28. $-3(4 - 7i) = -12 + 21i$
29. $2i(2 + 3i) = -6 + 4i$
30. $-5i(6 + 4i) = 20 - 30i$
 $= 4i + 6i^2 = 4i - 6 = -30i - 20i^2 = -30i + 20 =$

31. $(2+3i)(5+i) = ____ 32. (3-7i)(1+4i) = ____$

33. $(7-3i)(2-5i) = ____ 34. (1-8i)(5+3i) = ____$

31.
$$(2 + 3i)(5 + i) =$$

32. $(3 - 7i)(1 + 4i) =$
33. $(7 - 3i)(2 - 5i) =$
34. $(1 - 8i)(5 + 3i) =$

31.
$$(2+3i)(5+i) =$$

= 32. $(3-7i)(1+4i) =$ ______
33. $(7-3i)(2-5i) =$ 34. $(1-8i)(5+3i) =$

31.
$$(2+3i)(5+i) = _____ 32. (3-7i)(1+4i) = _____= 10$$

33. $(7-3i)(2-5i) = _____ 34. (1-8i)(5+3i) = _____$

31.
$$(2+3i)(5+i) =$$
 _____ 32. $(3-7i)(1+4i) =$ _____
= 10
33. $(7-3i)(2-5i) =$ _____ 34. $(1-8i)(5+3i) =$ _____

31.
$$(2+3i)(5+i) =$$
 _____ 32. $(3-7i)(1+4i) =$ _____
= 10 + 2i 33. $(7-3i)(2-5i) =$ _____ 34. $(1-8i)(5+3i) =$ _____

31.
$$(2 + 3i)(5 + i) =$$
 32. $(3 - 7i)(1 + 4i) =$
= 10 + 2i
33. $(7 - 3i)(2 - 5i) =$ 34. $(1 - 8i)(5 + 3i) =$

31.
$$(2+3i)(5+i) =$$
 _____ 32. $(3-7i)(1+4i) =$ _____
= 10 + 2i + 15i 33. $(7-3i)(2-5i) =$ 34. $(1-8i)(5+3i) =$

31.
$$(2+3i)(5+i) =$$
 ______ 32. $(3-7i)(1+4i) =$ ______
= 10 + 2i + 15i 33. $(7-3i)(2-5i) =$ 34. $(1-8i)(5+3i) =$

31.
$$(2+3i)(5+i) =$$
 _____ 32. $(3-7i)(1+4i) =$ _____
= 10 + 2i + 15i + 3i²
33. $(7-3i)(2-5i) =$ _____ 34. $(1-8i)(5+3i) =$ _____

31.
$$(2+3i)(5+i) =$$
 _____ 32. $(3-7i)(1+4i) =$ _____
= $10 + 2i + 15i + 3i^2 =$ 33. $(7-3i)(2-5i) =$ _____ 34. $(1-8i)(5+3i) =$ _____

31.
$$(2 + 3i)(5 + i) =$$

= 10 + 2i + 15i + 3i² =
33. $(7 - 3i)(2 - 5i) =$ _____ 34. $(1 - 8i)(5 + 3i) =$ _____

31.
$$(2 + 3i)(5 + i) =$$

= 10 + 2i + 15i + 3i² =
33. $(7 - 3i)(2 - 5i) =$ _____ 34. $(1 - 8i)(5 + 3i) =$ _____

31.
$$(2+3i)(5+i) = 7$$

 $= 10 + 2i + 15i + 3i^2 =$
32. $(3-7i)(1+4i) =$
33. $(7-3i)(2-5i) =$
34. $(1-8i)(5+3i) =$

31.
$$(2+3i)(5+i) = 7$$

= 10 + 2i + 15i + 3i² =
33. $(7-3i)(2-5i) = 2$
34. $(1-8i)(5+3i) = 2$

31.
$$(2+3i)(5+i) = 7+17i$$

= 10 + 2i + 15i + 3i² = 32. $(3-7i)(1+4i) = 10$

33. (7-3i)(2-5i) =

When multiplying complex numbers, first treat the <u>number i</u> like a variable. Second, remember that i is not a variable. If you get i² as part of your answer, replace it with -1. Note: since $i = \sqrt{-1}$, $i^2 = -1$.

34. (1-8i)(5+3i) =

31.
$$(2+3i)(5+i) = 7+17i$$

32.
$$(3-7i)(1+4i) =$$

 $= 10 + 2i + 15i + 3i^2 =$

33. $(7-3i)(2-5i) = _____ 34. (1-8i)(5+3i) = _____$

31.
$$(2+3i)(5+i) = \underline{7+17i}$$

= $10 + 2i + 15i + 3i^2 =$
33. $(7-3i)(2-5i) = \underline{34.} (1-8i)(5+3i) = \underline{34.} (1-8i)(5+3i)(5+3i) = \underline{34.} (1-8i)(5+3i)(5+3i) = \underline{34.} (1-8i)(5+3i)(5$

31.
$$(2+3i)(5+i) = \underline{7+17i}$$

= $10 + 2i + 15i + 3i^2 =$
33. $(7-3i)(2-5i) = \underline{34.} (1-8i)(5+3i) = \underline{34.} (1-8i)(5+3i)(5+3i) = \underline{34.} (1-8i)(5+3i) = \underline{34.} (1-8i)(5+3i)(5+3i) =$

31.
$$(2+3i)(5+i) = \underline{7+17i}$$

= $10 + 2i + 15i + 3i^2 =$
33. $(7-3i)(2-5i) = \underline{34}$. $(1-8i)(5+3i) = \underline{34}$

31.
$$(2+3i)(5+i) = \underline{7+17i}$$

= $10 + 2i + 15i + 3i^2 =$
33. $(7-3i)(2-5i) = \underline{34}$. $(1-8i)(5+3i) = \underline{34}$

31.
$$(2+3i)(5+i) = \underline{7+17i}$$

= $10 + 2i + 15i + 3i^2 =$
33. $(7-3i)(2-5i) = \underline{34}$. $(1-8i)(5+3i) = \underline{34}$

31.
$$(2+3i)(5+i) = \underline{7+17i}$$

= $10 + 2i + 15i + 3i^2 =$
33. $(7-3i)(2-5i) = \underline{34}$. $(1-8i)(5+3i) = \underline{34}$

31.
$$(2+3i)(5+i) = \underline{7+17i}$$

= $10+2i+15i+3i^2 =$
32. $(3-7i)(1+4i) = \underline{31}$
= $3+12i-7i-28i^2 =$
33. $(7-3i)(2-5i) =$
34. $(1-8i)(5+3i) =$

31.
$$(2+3i)(5+i) = \underline{7+17i}$$

= $10 + 2i + 15i + 3i^2 =$
32. $(3-7i)(1+4i) = \underline{31}$
 $= 3 + 12i - 7i - 28i^2 =$

33. $(7-3i)(2-5i) = ____ 34. (1-8i)(5+3i) = ____$

31.
$$(2+3i)(5+i) = \underline{7+17i}$$

= $10 + 2i + 15i + 3i^2 =$
32. $(3-7i)(1+4i) = \underline{31+5i}$
= $3 + 12i - 7i - 28i^2 =$

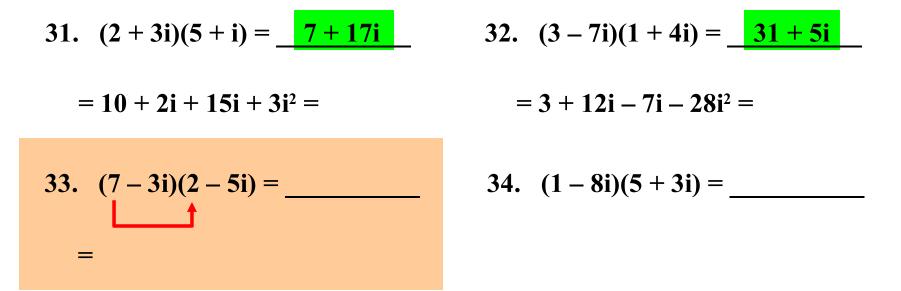
33. $(7-3i)(2-5i) = ____ 34. (1-8i)(5+3i) = ____$

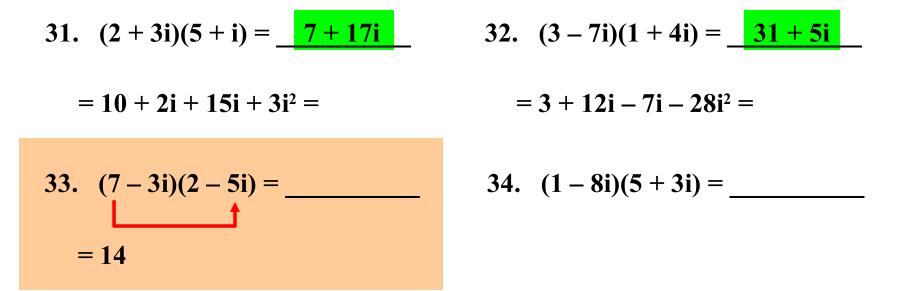
31.
$$(2+3i)(5+i) = \underline{7+17i}$$

= $10 + 2i + 15i + 3i^2 =$
32. $(3-7i)(1+4i) = \underline{31+5i}$
= $3+12i - 7i - 28i^2 =$
33. $(7-3i)(2-5i) = \underline{34}$. $(1-8i)(5+3i) = \underline{34}$

31.
$$(2+3i)(5+i) = \underline{7+17i}$$
 32. $(3-7i)(1+4i) = \underline{31+5i}$
 $= 10 + 2i + 15i + 3i^2 =$
 $= 3 + 12i - 7i - 28i^2 =$

 33. $(7-3i)(2-5i) = \underline{$
 34. $(1-8i)(5+3i) = \underline{$





31.
$$(2+3i)(5+i) = \underline{7+17i}$$

 $= 10+2i+15i+3i^2 = 3+12i-7i-28i^2 = 34. (1-8i)(5+3i) = \underline{-1}$
 $= 14-35i-6i+15i^2$
32. $(3-7i)(1+4i) = \underline{31+5i}$

31.
$$(2+3i)(5+i) = \underline{7+17i}$$

 $= 10+2i+15i+3i^{2} = = 3+12i-7i-28i^{2} = 34.$ $(1-8i)(5+3i) = \underline{-1}$
 $= 14-35i-6i+15i^{2} = 34.$ $(1-8i)(5+3i) = \underline{-1}$

31.
$$(2+3i)(5+i) = \underline{7+17i}$$

 $= 10+2i+15i+3i^{2} = = 3+12i-7i-28i^{2} = 34.$ $(1-8i)(5+3i) = \underline{-1}$
 $= 14-35i-6i+15i^{2} = 34.$

31.
$$(2+3i)(5+i) = \underline{7+17i}$$

 $= 10+2i+15i+3i^{2} = = 3+12i-7i-28i^{2} = 34.$ $(1-8i)(5+3i) = \underline{-1-41i}$
 $= 14-35i-6i+15i^{2} = 34.$ $(1-8i)(5+3i) = \underline{-1-41i}$

31.
$$(2+3i)(5+i) = \underline{7+17i}$$

 $= 10+2i+15i+3i^{2} = = 3+12i-7i-28i^{2} = 34$. $(1-8i)(5+3i) = \underline{-1-41i}$
 $= 14-35i-6i+15i^{2} = 34$. $(1-8i)(5+3i) = \underline{-14i}$

31.
$$(2+3i)(5+i) = \underline{7+17i}$$
 32. $(3-7i)(1+4i) = \underline{31+5i}$
 $= 10 + 2i + 15i + 3i^2 =$
 $= 3 + 12i - 7i - 28i^2 =$

 33. $(7-3i)(2-5i) = \underline{-1-41i}$
 34. $(1-8i)(5+3i) = \underline{-1-41i}$
 $= 14 - 35i - 6i + 15i^2 =$
 $= 14 - 35i - 6i + 15i^2 =$

31.
$$(2+3i)(5+i) = \underline{7+17i}$$

 $= 10 + 2i + 15i + 3i^{2} = = 3 + 12i - 7i - 28i^{2} = 34.$
33. $(7-3i)(2-5i) = \underline{-1-41i}$
 $= 14 - 35i - 6i + 15i^{2} = = 34.$

31.
$$(2+3i)(5+i) = \underline{7+17i}$$

 $= 10+2i+15i+3i^2 = = 3+12i-7i-28i^2 = 34.$
33. $(7-3i)(2-5i) = \underline{-1-41i}$
 $= 14-35i-6i+15i^2 = = 5$

31.
$$(2+3i)(5+i) = \underline{7+17i}$$

 $= 10+2i+15i+3i^2 = = 3+12i-7i-28i^2 = 34. (1-8i)(5+3i) = \underline{-1-41i}$
 $= 14-35i-6i+15i^2 = = 5$

31.
$$(2+3i)(5+i) = \underline{7+17i}$$

 $= 10+2i+15i+3i^2 = 3+12i-7i-28i^2 = 34.$
33. $(7-3i)(2-5i) = \underline{-1-41i}$
 $= 14-35i-6i+15i^2 = 5+3i$

31.
$$(2+3i)(5+i) = \underline{7+17i}$$

 $= 10+2i+15i+3i^2 = 3+12i-7i-28i^2 = 34.$
33. $(7-3i)(2-5i) = \underline{-1-41i}$
 $= 14-35i-6i+15i^2 = 5+3i$

31.
$$(2+3i)(5+i) = \underline{7+17i}$$

 $= 10+2i+15i+3i^2 = 3+12i-7i-28i^2 = 34.$
33. $(7-3i)(2-5i) = \underline{-1-41i}$
 $= 14-35i-6i+15i^2 = 5+3i-40i$

31.
$$(2+3i)(5+i) = \underline{7+17i}$$

 $= 10+2i+15i+3i^2 = = 3+12i-7i-28i^2 = 34.$
33. $(7-3i)(2-5i) = \underline{-1-41i}$
 $= 14-35i-6i+15i^2 = = 5+3i-40i$

31.
$$(2+3i)(5+i) = \underline{7+17i}$$

 $= 10+2i+15i+3i^2 = = 3+12i-7i-28i^2 = 34. (1-8i)(5+3i) = \underline{-1-41i}$
 $= 14-35i-6i+15i^2 = = 5+3i-40i-24i^2$

31.
$$(2+3i)(5+i) = \underline{7+17i}$$
 32. $(3-7i)(1+4i) = \underline{31+5i}$
 $= 10 + 2i + 15i + 3i^2 =$
 $= 3 + 12i - 7i - 28i^2 =$

 33. $(7-3i)(2-5i) = \underline{-1-41i}$
 34. $(1-8i)(5+3i) = \underline{-1-41i}$
 $= 14 - 35i - 6i + 15i^2 =$
 $= 5 + 3i - 40i - 24i^2 =$

31.
$$(2+3i)(5+i) = \underline{7+17i}$$

 $= 10+2i+15i+3i^2 = 3+12i-7i-28i^2 = 34.$
33. $(7-3i)(2-5i) = \underline{-1-41i}$
 $= 14-35i-6i+15i^2 = 34.$
 $(1-8i)(5+3i) = \underline{-1-41i}$
 $= 5+3i-40i-24i^2 = 34.$

31.
$$(2+3i)(5+i) = \underline{7+17i}$$

 $= 10+2i+15i+3i^2 = 3+12i-7i-28i^2 = 34.$
33. $(7-3i)(2-5i) = \underline{-1-41i}$
 $= 14-35i-6i+15i^2 = 34.$
 $(1-8i)(5+3i) = \underline{-1-41i}$
 $= 5+3i-40i-24i^2 = 34.$

31.
$$(2+3i)(5+i) = \underline{7+17i}$$

 $= 10+2i+15i+3i^2 = 3+12i-7i-28i^2 = 34. (1-8i)(5+3i) = \underline{29}$
 $= 14-35i-6i+15i^2 = 5+3i-40i-24i^2 = 32.$

31.
$$(2+3i)(5+i) = \underline{7+17i}$$

 $= 10+2i+15i+3i^2 = 3+12i-7i-28i^2 = 34.$
33. $(7-3i)(2-5i) = \underline{-1-41i}$
 $= 14-35i-6i+15i^2 = 5+3i-40i-24i^2 = 34.$

31.
$$(2+3i)(5+i) = \underline{7+17i}$$

 $= 10+2i+15i+3i^2 = 3+12i-7i-28i^2 = 34.$
33. $(7-3i)(2-5i) = \underline{-1-41i}$
 $= 14-35i-6i+15i^2 = 5+3i-40i-24i^2 = 34.$

31.
$$(2+3i)(5+i) = \underline{7+17i}$$
 32. $(3-7i)(1+4i) = \underline{31+5i}$
 $= 10+2i+15i+3i^2 =$
 $= 3+12i-7i-28i^2 =$

 33. $(7-3i)(2-5i) = \underline{-1-41i}$
 34. $(1-8i)(5+3i) = \underline{29-37i}$
 $= 14-35i-6i+15i^2 =$
 $= 5+3i-40i-24i^2 =$

31.
$$(2+3i)(5+i) = \underline{7+17i}$$

 $= 10 + 2i + 15i + 3i^{2} = = 3 + 12i - 7i - 28i^{2} = 34 + 12i -$

35. $(8+5i)(8-5i) = _____ 36. (-2+i)(-2-i) = _____$

37. (6-4i)(2-3i) = 38. (1-i)(1+3i) =

35.
$$(8 + 5i)(8 - 5i) =$$

36. $(-2 + i)(-2 - i) =$
37. $(6 - 4i)(2 - 3i) =$
38. $(1 - i)(1 + 3i) =$

35.
$$(8 + 5i)(8 - 5i) =$$
_____ 36. $(-2 + i)(-2 - i) =$ _____
=
37. $(6 - 4i)(2 - 3i) =$ _____ 38. $(1 - i)(1 + 3i) =$ _____

35.
$$(8 + 5i)(8 - 5i) =$$
_____ 36. $(-2 + i)(-2 - i) =$ _____
= 64
37. $(6 - 4i)(2 - 3i) =$ _____ 38. $(1 - i)(1 + 3i) =$ _____

35.
$$(8 + 5i)(8 - 5i) = _____ 36. (-2 + i)(-2 - i) = _____= 6437. $(6 - 4i)(2 - 3i) = _____ 38. (1 - i)(1 + 3i) = _____$$$

35.
$$(8 + 5i)(8 - 5i) = _____ 36. (-2 + i)(-2 - i) = _____= 64 - 40i$$

37. $(6 - 4i)(2 - 3i) = 38. (1 - i)(1 + 3i) =$

35.
$$(8 + 5i)(8 - 5i) = _____ 36. (-2 + i)(-2 - i) = _____= 64 - 40i$$

37. $(6 - 4i)(2 - 3i) = _____ 38. (1 - i)(1 + 3i) = _____$

35.
$$(8 + 5i)(8 - 5i) =$$

= $64 - 40i + 40i$
37. $(6 - 4i)(2 - 3i) =$
36. $(-2 + i)(-2 - i) =$
38. $(1 - i)(1 + 3i) =$

35.
$$(8 + 5i)(8 - 5i) = _____ 36. (-2 + i)(-2 - i) = _____= 64 - 40i + 40i 37. (6 - 4i)(2 - 3i) = _____ 38. (1 - i)(1 + 3i) = _____$$

35.
$$(8 + 5i)(8 - 5i) =$$

= 64 - 40i + 40i - 25i²
37. $(6 - 4i)(2 - 3i) =$ _______
38. $(1 - i)(1 + 3i) =$ ______

35.
$$(8 + 5i)(8 - 5i) = _$$

= $64 - 40i + 40i - 25i^2 =$
37. $(6 - 4i)(2 - 3i) = _$
38. $(1 - i)(1 + 3i) = _$

35.
$$(8 + 5i)(8 - 5i) =$$

 $= 64 - 40i + 40i - 25i^2 =$
36. $(-2 + i)(-2 - i) =$
 $= 36i^2 = 36i^2 =$

35.
$$(8 + 5i)(8 - 5i) =$$

 $= 64 - 40i + 40i - 25i^2 =$
36. $(-2 + i)(-2 - i) =$
 $= 36i^2 = 36i^2 =$

35.
$$(8 + 5i)(8 - 5i) = 89$$

 $= 64 - 40i + 40i - 25i^2 =$
36. $(-2 + i)(-2 - i) =$
37. $(6 - 4i)(2 - 3i) =$
38. $(1 - i)(1 + 3i) =$

35.
$$(8 + 5i)(8 - 5i) = \underline{89}$$

= $64 - 40i + 40i - 25i^2 =$
37. $(6 - 4i)(2 - 3i) = \underline{38}$. $(1 - i)(1 + 3i) = \underline{38}$.

37. $(6-4i)(2-3i) = _____ 38. (1-i)(1+3i) = _____$

35.
$$(8 + 5i)(8 - 5i) = \underline{89}$$

= $64 - 40i + 40i - 25i^2 =$
37. $(6 - 4i)(2 - 3i) = \underline{38}$. $(1 - i)(1 + 3i) = \underline{38}$.

35.
$$(8 + 5i)(8 - 5i) = \underline{89}$$

= $64 - 40i + 40i - 25i^2 =$
37. $(6 - 4i)(2 - 3i) = \underline{38}$. $(1 - i)(1 + 3i) = \underline{38}$.

35.
$$(8 + 5i)(8 - 5i) = \underline{89}$$

= $64 - 40i + 40i - 25i^2 = = 36. (-2 + i)(-2 - i) = \underline{37}$
37. $(6 - 4i)(2 - 3i) = \underline{38}$
38. $(1 - i)(1 + 3i) = \underline{38}$

35.
$$(8 + 5i)(8 - 5i) =$$

$$= 64 - 40i + 40i - 25i^{2} =$$
36. $(-2 + i)(-2 - i) =$

$$= 4$$
37. $(6 - 4i)(2 - 3i) =$
38. $(1 - i)(1 + 3i) =$

35.
$$(8 + 5i)(8 - 5i) =$$

$$= 64 - 40i + 40i - 25i^{2} =$$
36. $(-2 + i)(-2 - i) =$

$$= 4 + 2i$$
37. $(6 - 4i)(2 - 3i) =$
38. $(1 - i)(1 + 3i) =$

35.
$$(8 + 5i)(8 - 5i) =$$

$$= 64 - 40i + 40i - 25i^{2} =$$
36. $(-2 + i)(-2 - i) =$

$$= 4 + 2i$$
37. $(6 - 4i)(2 - 3i) =$
38. $(1 - i)(1 + 3i) =$

35.
$$(8 + 5i)(8 - 5i) =$$

$$= 64 - 40i + 40i - 25i^{2} =$$
36. $(-2 + i)(-2 - i) =$

$$= 4 + 2i - 2i$$
37. $(6 - 4i)(2 - 3i) =$
38. $(1 - i)(1 + 3i) =$

35.
$$(8 + 5i)(8 - 5i) =$$

$$= 64 - 40i + 40i - 25i^{2} =$$
36. $(-2 + i)(-2 - i) =$

$$= 4 + 2i - 2i$$
37. $(6 - 4i)(2 - 3i) =$
38. $(1 - i)(1 + 3i) =$

35.
$$(8 + 5i)(8 - 5i) =$$
89
= $64 - 40i + 40i - 25i^2 =$
36. $(-2 + i)(-2 - i) =$
= $4 + 2i - 2i - i^2$
37. $(6 - 4i)(2 - 3i) =$ 38. $(1 - i)(1 + 3i) =$

35.
$$(8 + 5i)(8 - 5i) = \underline{89}$$

= $64 - 40i + 40i - 25i^2 =$
37. $(6 - 4i)(2 - 3i) = \underline{38}$. $(1 - i)(1 + 3i) = \underline{38}$.

35.
$$(8 + 5i)(8 - 5i) =$$

$$= 64 - 40i + 40i - 25i^{2} =$$
36. $(-2 + i)(-2 - i) =$

$$= 4 + 2i - 2i - i^{2} =$$
37. $(6 - 4i)(2 - 3i) =$
38. $(1 - i)(1 + 3i) =$

35.
$$(8 + 5i)(8 - 5i) =$$

$$= 64 - 40i + 40i - 25i^{2} =$$
36. $(-2 + i)(-2 - i) =$

$$= 4 + 2i - 2i - i^{2} =$$
37. $(6 - 4i)(2 - 3i) =$
38. $(1 - i)(1 + 3i) =$

35.
$$(8+5i)(8-5i) = \underline{89}$$

= $64 - 40i + 40i - 25i^2 =$
36. $(-2+i)(-2-i) = \underline{5}$
= $4 + 2i - 2i - i^2 =$
37. $(6-4i)(2-3i) = \underline{38}$. $(1-i)(1+3i) = \underline{5}$

35.
$$(8 + 5i)(8 - 5i) = \underline{89}$$

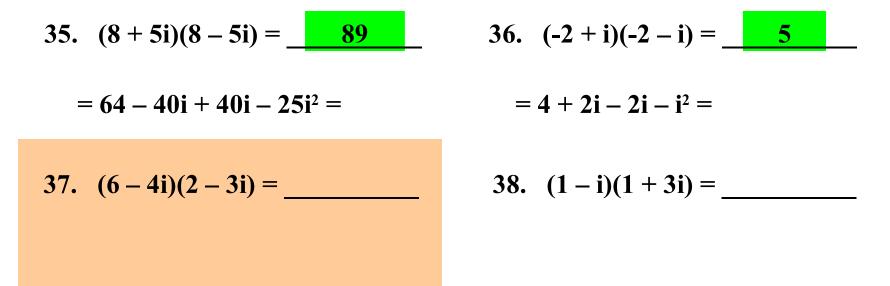
 $= 64 - 40i + 40i - 25i^{2} = 36. (-2 + i)(-2 - i) = \underline{5}$
 $= 4 + 2i - 2i - i^{2} = 37. (6 - 4i)(2 - 3i) = 38. (1 - i)(1 + 3i) = 38.$

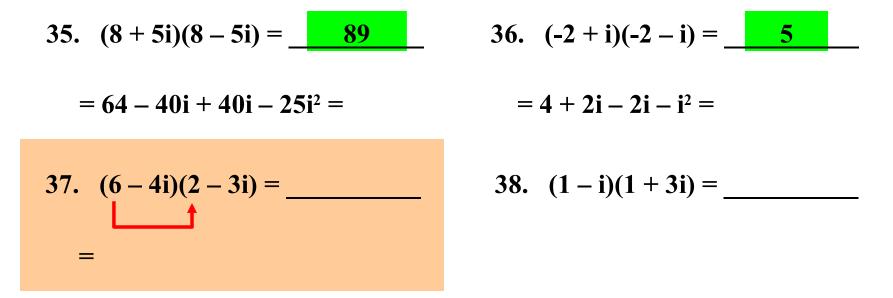
35.
$$(8 + 5i)(8 - 5i) = \underline{89}$$

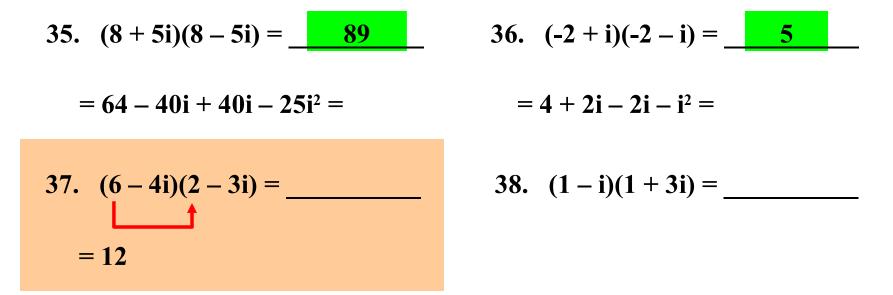
 $= 64 - 40i + 40i - 25i^{2} = 37.$ $(6 - 4i)(2 - 3i) = 38.$ $(1 - i)(1 + 3i) = 38.$

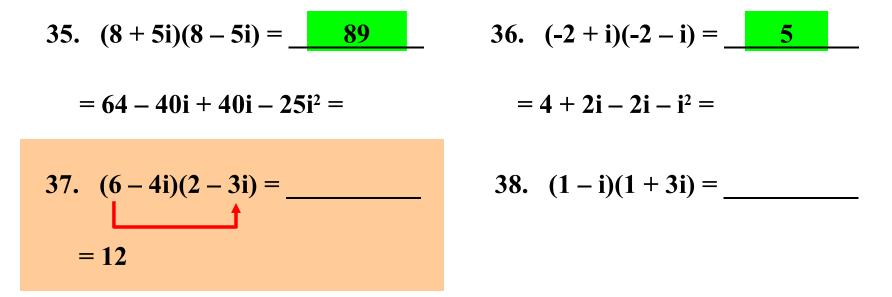
35.
$$(8 + 5i)(8 - 5i) = \underline{89}$$

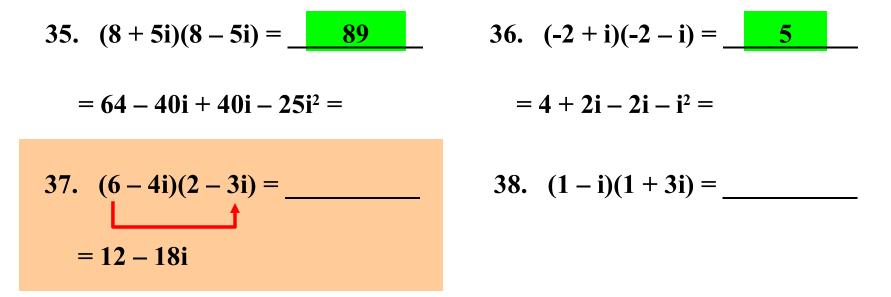
= $64 - 40i + 40i - 25i^2 =$
36. $(-2 + i)(-2 - i) = \underline{5}$
= $4 + 2i - 2i - i^2 =$
37. $(6 - 4i)(2 - 3i) = \underline{38}$. $(1 - i)(1 + 3i) = \underline{5}$

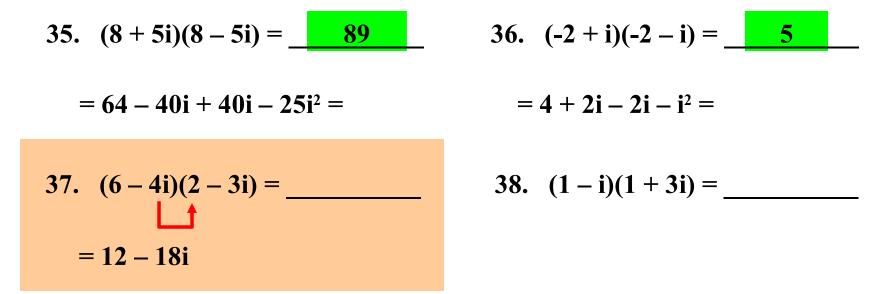


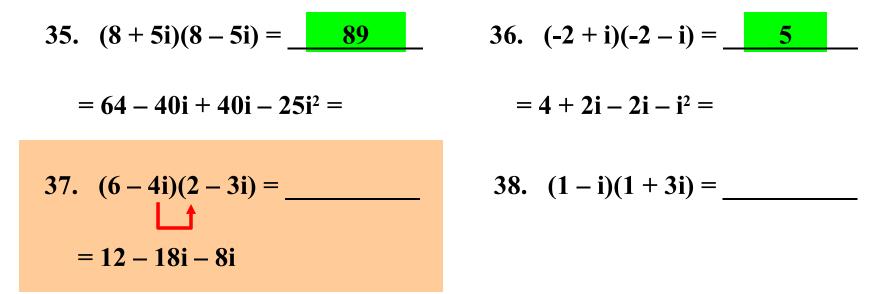


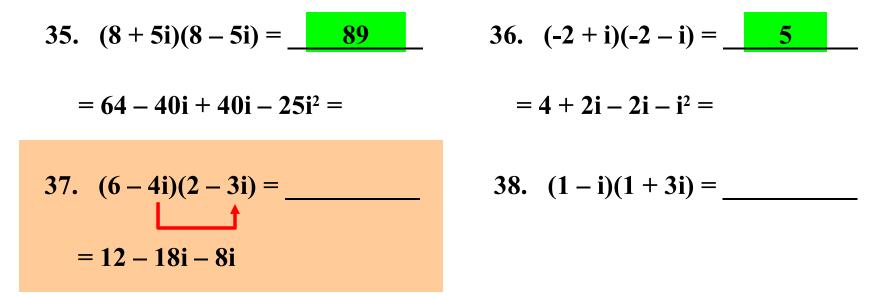


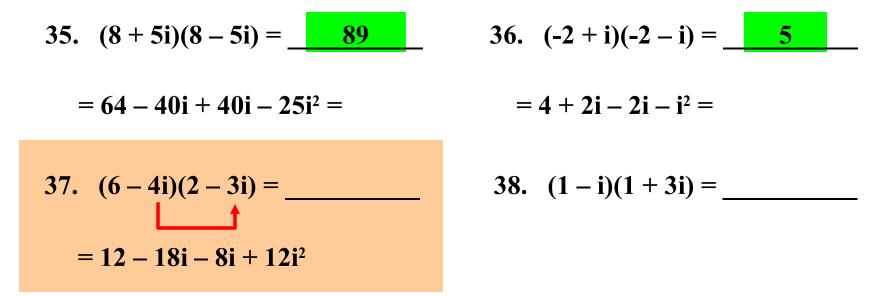


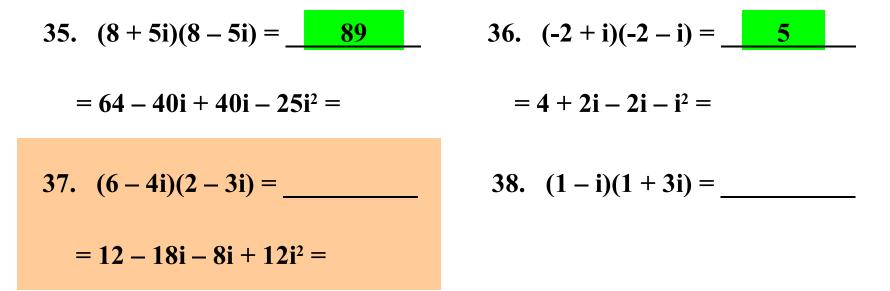


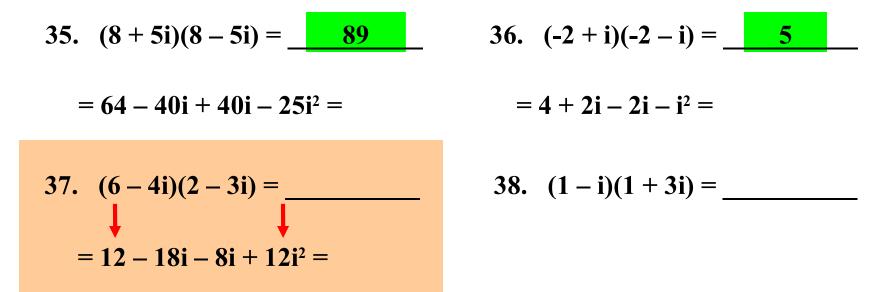


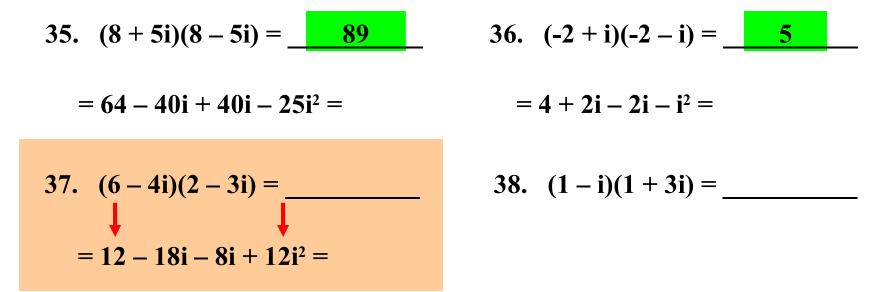












35.
$$(8 + 5i)(8 - 5i) = \underline{89}$$

 $= 64 - 40i + 40i - 25i^{2} = 36. (-2 + i)(-2 - i) = \underline{5}$
 $= 4 + 2i - 2i - i^{2} = 37. (6 - 4i)(2 - 3i) = \underline{0}$
 $= 12 - 18i - 8i + 12i^{2} = 38. (1 - i)(1 + 3i) = \underline{5}$

35.
$$(8 + 5i)(8 - 5i) =$$

= $64 - 40i + 40i - 25i^2 =$
37. $(6 - 4i)(2 - 3i) =$
= $12 - 18i - 8i + 12i^2 =$
36. $(-2 + i)(-2 - i) =$
= $4 + 2i - 2i - i^2 =$
38. $(1 - i)(1 + 3i) =$
38. $(1 - i)(1 + 3i) =$

35.
$$(8 + 5i)(8 - 5i) = \underline{89}$$

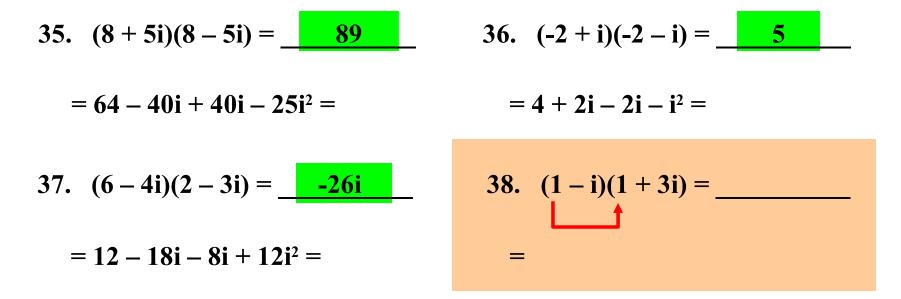
 $= 64 - 40i + 40i - 25i^{2} = = 4 + 2i - 2i - i^{2} = 37.$
 $(6 - 4i)(2 - 3i) = \underline{0 - 26i}$
 $= 12 - 18i - 8i + 12i^{2} = 38.$ $(1 - i)(1 + 3i) = \underline{38.}$

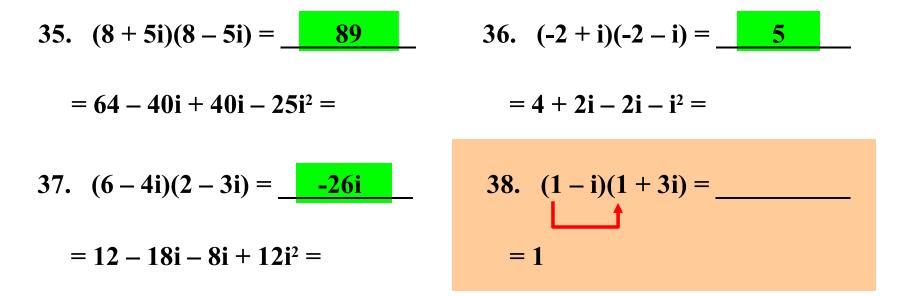
35.
$$(8 + 5i)(8 - 5i) = \underline{89}$$

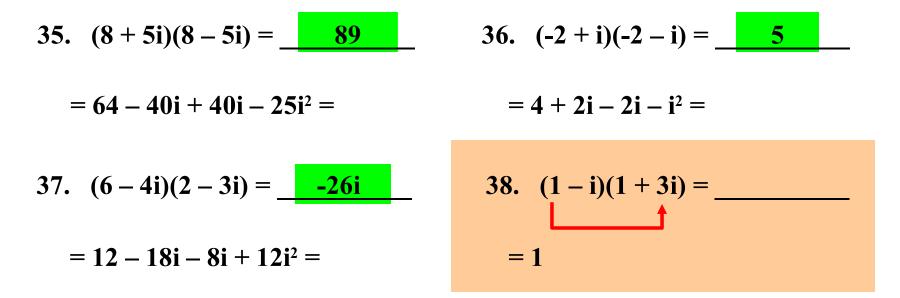
 $= 64 - 40i + 40i - 25i^{2} = = 4 + 2i - 2i - i^{2} = 37.$
 $(6 - 4i)(2 - 3i) = \underline{-26i}$
 $= 12 - 18i - 8i + 12i^{2} = 38.$ $(1 - i)(1 + 3i) = \underline{-26i}$

35.
$$(8 + 5i)(8 - 5i) = \underline{89}$$

 $= 64 - 40i + 40i - 25i^2 = = 4 + 2i - 2i - i^2 = 37.$
 $(6 - 4i)(2 - 3i) = \underline{-26i}$
 $= 12 - 18i - 8i + 12i^2 = 38.$ $(1 - i)(1 + 3i) = \underline{-26i}$







35.
$$(8 + 5i)(8 - 5i) = \underline{89}$$

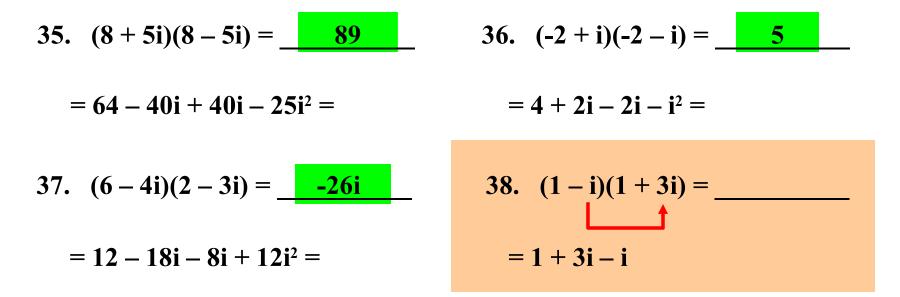
 $= 64 - 40i + 40i - 25i^2 = = 4 + 2i - 2i - i^2 = 37.$
 $(6 - 4i)(2 - 3i) = \underline{-26i}$
 $= 12 - 18i - 8i + 12i^2 = 38.$ $(1 - i)(1 + 3i) = \underline{-126i}$
 $= 1 + 3i$

35.
$$(8 + 5i)(8 - 5i) = \underline{89}$$

 $= 64 - 40i + 40i - 25i^2 = = 4 + 2i - 2i - i^2 = 37.$
 $(6 - 4i)(2 - 3i) = \underline{-26i}$
 $= 12 - 18i - 8i + 12i^2 = = 1 + 3i$

35.
$$(8 + 5i)(8 - 5i) = \underline{89}$$

 $= 64 - 40i + 40i - 25i^2 = = 4 + 2i - 2i - i^2 = 37.$
 $(6 - 4i)(2 - 3i) = \underline{-26i}$
 $= 12 - 18i - 8i + 12i^2 = = 1 + 3i - i$



35.
$$(8 + 5i)(8 - 5i) = \underline{89}$$

 $= 64 - 40i + 40i - 25i^2 = = 4 + 2i - 2i - i^2 = 37.$
 $(6 - 4i)(2 - 3i) = \underline{-26i}$
 $= 12 - 18i - 8i + 12i^2 = = 1 + 3i - i - 3i^2$

35.
$$(8 + 5i)(8 - 5i) = \underline{89}$$

 $= 64 - 40i + 40i - 25i^2 = = 4 + 2i - 2i - i^2 = 37.$
 $(6 - 4i)(2 - 3i) = \underline{-26i}$
 $= 12 - 18i - 8i + 12i^2 = = 1 + 3i - i - 3i^2 = 38.$

35.
$$(8 + 5i)(8 - 5i) = \underline{89}$$

 $= 64 - 40i + 40i - 25i^{2} = = 4 + 2i - 2i - i^{2} = 37.$
 $(6 - 4i)(2 - 3i) = \underline{-26i}$
 $= 12 - 18i - 8i + 12i^{2} = 38.$ $(1 - i)(1 + 3i) = \underline{-26i}$
 $= 1 + 3i - i - 3i^{2} = 38.$

35.
$$(8 + 5i)(8 - 5i) = \underline{89}$$

 $= 64 - 40i + 40i - 25i^{2} = = 4 + 2i - 2i - i^{2} = 37.$
 $(6 - 4i)(2 - 3i) = \underline{-26i}$
 $= 12 - 18i - 8i + 12i^{2} = 38.$ $(1 - i)(1 + 3i) = \underline{-26i}$
 $= 1 + 3i - i - 3i^{2} = 38.$

35.
$$(8 + 5i)(8 - 5i) = \underline{89}$$

 $= 64 - 40i + 40i - 25i^2 = = 4 + 2i - 2i - i^2 = 38. (1 - i)(1 + 3i) = \underline{4}$
 $= 12 - 18i - 8i + 12i^2 = 38. (1 - i)(1 + 3i) = \underline{4}$
 $= 1 + 3i - i - 3i^2 = 38. (1 - i)(1 + 3i) = \underline{4}$

35.
$$(8 + 5i)(8 - 5i) = \underline{89}$$

 $= 64 - 40i + 40i - 25i^{2} = = 4 + 2i - 2i - i^{2} = 37.$
 $(6 - 4i)(2 - 3i) = \underline{-26i}$
 $= 12 - 18i - 8i + 12i^{2} = 38.$ $(1 - i)(1 + 3i) = \underline{4}$
 $= 1 + 3i - i - 3i^{2} = 38.$

35.
$$(8 + 5i)(8 - 5i) = \underline{89}$$

 $= 64 - 40i + 40i - 25i^{2} = = 4 + 2i - 2i - i^{2} = 37.$
 $(6 - 4i)(2 - 3i) = \underline{-26i}$
 $= 12 - 18i - 8i + 12i^{2} = 38.$ $(1 - i)(1 + 3i) = \underline{4 + 2i}$
 $= 1 + 3i - i - 3i^{2} = 38.$

35.
$$(8 + 5i)(8 - 5i) = \underline{89}$$

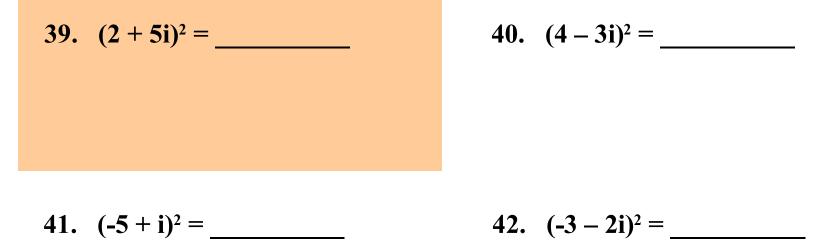
 $= 64 - 40i + 40i - 25i^2 = = 4 + 2i - 2i - i^2 = 37.$
 $(6 - 4i)(2 - 3i) = \underline{-26i}$
 $= 12 - 18i - 8i + 12i^2 = = 1 + 3i - i - 3i^2 = 38.$

35.
$$(8 + 5i)(8 - 5i) = \underline{89}$$

 $= 64 - 40i + 40i - 25i^{2} = = 4 + 2i - 2i - i^{2} = 4 + 2i$
37. $(6 - 4i)(2 - 3i) = \underline{-26i}$
 $= 12 - 18i - 8i + 12i^{2} = = 1 + 3i - i - 3i^{2} = 4 + 2i$

39.
$$(2+5i)^2 =$$
 40. $(4-3i)^2 =$

41.
$$(-5 + i)^2 =$$
 42. $(-3 - 2i)^2 =$



39. $(2 + 5i)^2 = _$ = (2 + 5i)(2 + 5i)40. $(4 - 3i)^2 = _$ 41. $(-5 + i)^2 = _$ 42. $(-3 - 2i)^2 = _$

39.
$$(2 + 5i)^2 = _$$

= $(2 + 5i)(2 + 5i) = _$
= $40. (4 - 3i)^2 = _$
= $41. (-5 + i)^2 = _$ $42. (-3 - 2i)^2 = _$

39.
$$(2 + 5i)^2 =$$

= $(2 + 5i)(2 + 5i) =$
= 4
40. $(4 - 3i)^2 =$
= 4
41. $(-5 + i)^2 =$
42. $(-3 - 2i)^2 =$

39.
$$(2 + 5i)^2 = _$$

= $(2 + 5i)(2 + 5i) = _$
= 4
40. $(4 - 3i)^2 = _$
= 4
41. $(-5 + i)^2 =$
42. $(-3 - 2i)^2 =$

39.
$$(2 + 5i)^2 =$$

= $(2 + 5i)(2 + 5i) =$
= $4 + 10i$
40. $(4 - 3i)^2 =$ _____

41. $(-5+i)^2 =$

When multiplying complex numbers, first treat the <u>number i</u> like a variable. Second, remember that i is not a variable. If you get i² as part of your answer, replace it with -1. Note: since $i = \sqrt{-1}$, $i^2 = -1$.

42. $(-3-2i)^2 =$

39.
$$(2 + 5i)^2 = _$$

= $(2 + 5i)(2 + 5i) = _$
= $4 + 10i$
40. $(4 - 3i)^2 = _$

41. $(-5+i)^2 =$

When multiplying complex numbers, first treat the <u>number i</u> like a variable. Second, remember that i is not a variable. If you get i² as part of your answer, replace it with -1. Note: since $i = \sqrt{-1}$, $i^2 = -1$.

42. $(-3-2i)^2 =$

39.
$$(2 + 5i)^2 =$$

= $(2 + 5i)(2 + 5i) =$
= $4 + 10i + 10i$
40. $(4 - 3i)^2 =$ _____

41. $(-5+i)^2 =$

42. $(-3-2i)^2 =$

39.
$$(2 + 5i)^2 =$$
 40. $(4 - 3i)^2 =$
= $(2 + 5i)(2 + 5i) =$
= $4 + 10i + 10i$

41. $(-5+i)^2 =$

When multiplying complex numbers, first treat the <u>number i</u> like a variable. Second, remember that i is not a variable. If you get i² as part of your answer, replace it with -1. Note: since $i = \sqrt{-1}$, $i^2 = -1$.

42. $(-3-2i)^2 =$

39.
$$(2 + 5i)^2 = _$$
 40. $(4 - 3i)^2 = _$
= $(2 + 5i)(2 + 5i) =$
= $4 + 10i + 10i + 25i^2$

41. $(-5+i)^2 =$

42.
$$(-3-2i)^2 =$$

39. $(2 + 5i)^2 = _$ = (2 + 5i)(2 + 5i) == $4 + 10i + 10i + 25i^2 =$ 40. $(4 - 3i)^2 = _$ 40. $(4 - 3i)^2 = _$ 41. $(-5 + i)^2 = _$ 42. $(-3 - 2i)^2 = _$

39.
$$(2 + 5i)^2 = _$$

 $= (2 + 5i)(2 + 5i) = = = 4 + 10i + 10i + 25i^2 = 42. (-3 - 2i)^2 = _$

39.
$$(2 + 5i)^2 =$$

= $(2 + 5i)(2 + 5i) =$
= $4 + 10i + 10i + 25i^2 =$
40. $(4 - 3i)^2 =$
= $4 + 10i + 10i + 25i^2 =$
42. $(-3 - 2i)^2 =$

39.
$$(2 + 5i)^2 = \underline{-21}$$

 $= (2 + 5i)(2 + 5i) =$
 $= 4 + 10i + 10i + 25i^2 =$
40. $(4 - 3i)^2 = \underline{-21}$
40. $(4 - 3i)^2 = \underline{-21}$
41. $(-5 + i)^2 = \underline{-21}$
42. $(-3 - 2i)^2 = \underline{-21}$

39.
$$(2 + 5i)^2 = \underline{-21}$$

= $(2 + 5i)(2 + 5i) =$
 \downarrow \downarrow
= $4 + 10i + 10i + 25i^2 =$
40. $(4 - 3i)^2 =$

41. $(-5 + i)^2 =$ 42. $(-3 - 2i)^2 =$

39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$

= $(2 + 5i)(2 + 5i) =$
= $4 + 10i + 10i + 25i^2 =$
40. $(4 - 3i)^2 =$

41. $(-5 + i)^2 =$ 42. $(-3 - 2i)^2 =$

39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$

= $(2 + 5i)(2 + 5i) =$
= $4 + 10i + 10i + 25i^2 =$
40. $(4 - 3i)^2 = \underline{-21 + 20i}$

41. $(-5 + i)^2 =$ 42. $(-3 - 2i)^2 =$

39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$

= $(2 + 5i)(2 + 5i) =$
= $4 + 10i + 10i + 25i^2 =$
40. $(4 - 3i)^2 = \underline{-3i}(4 - 3i)$
= $(4 - 3i)(4 - 3i)$

41. $(-5 + i)^2 =$ 42. $(-3 - 2i)^2 =$

39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$

= $(2 + 5i)(2 + 5i) =$
= $4 + 10i + 10i + 25i^2 =$

40.
$$(4-3i)^2 =$$

= $(4-3i)(4-3i) =$
=

41. $(-5+i)^2 =$

42.
$$(-3-2i)^2 =$$

39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$

= $(2 + 5i)(2 + 5i) =$
= $4 + 10i + 10i + 25i^2 =$
40. $(4 - 3i)^2 = \underline{-21 + 20i}$
= $(4 - 3i)(4 - 3i) = \underline{-3i}$
= 16

41. $(-5+i)^2 =$

42.
$$(-3-2i)^2 =$$

39.
$$(2 + 5i)^2 = _ -21 + 20i$$
 40. $(4 - 3i)^2 = _$
 $= (2 + 5i)(2 + 5i) =$
 $= (4 - 3i)(4 - 3i) =$
 $= 4 + 10i + 10i + 25i^2 =$
 $= 16$

41. $(-5+i)^2 =$

$$= (4 - 3i)(4 - 3i) =$$

$$= 16$$

42.
$$(-3-2i)^2 =$$

39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$

= $(2 + 5i)(2 + 5i) =$
= $4 + 10i + 10i + 25i^2 =$
40. $(4 - 3i)^2 = \underline{-40i}$
= $(4 - 3i)(4 - 3i) = \underline{-40i}$
= $16 - 12i$

41. $(-5 + i)^2 =$ 42. $(-3 - 2i)^2 =$

39.
$$(2+5i)^2 = \underline{-21+20i}$$

= $(2+5i)(2+5i) =$
= $4+10i+10i+25i^2 =$
40. $(4-3i)^2 = \underline{-4}$
= $(4-3i)(4-3i) = \underline{-4}$
= $16-12i$

41. $(-5 + i)^2 =$ 42. $(-3 - 2i)^2 =$

39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$

= $(2 + 5i)(2 + 5i) =$
= $4 + 10i + 10i + 25i^2 =$
40. $(4 - 3i)^2 = \underline{-4}$
= $(4 - 3i)(4 - 3i) = \underline{-4}$
= $16 - 12i - 12i$

41. $(-5 + i)^2 =$ _____

42.
$$(-3-2i)^2 =$$

39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$

= $(2 + 5i)(2 + 5i) =$
= $4 + 10i + 10i + 25i^2 =$
40. $(4 - 3i)^2 = \underline{-4i}$
= $(4 - 3i)(4 - 3i) = \underline{-4i}$
= $16 - 12i - 12i$

41. $(-5+i)^2 =$ _____

42.
$$(-3-2i)^2 =$$

39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$

= $(2 + 5i)(2 + 5i) =$
= $4 + 10i + 10i + 25i^2 =$
40. $(4 - 3i)^2 = \underline{-40i}$
= $(4 - 3i)(4 - 3i) = \underline{-40i}$
= $16 - 12i - 12i + 9i^2$

41. $(-5 + i)^2 =$ 42. $(-3 - 2i)^2 =$

42.
$$(-3-2i)^2 =$$

39.
$$(2 + 5i)^2 = _ -21 + 20i$$
 40. $(4 - 3i)^2 = _$
 $= (2 + 5i)(2 + 5i) =$
 $= (4 - 3i)(4 - 3i) =$
 $= 4 + 10i + 10i + 25i^2 =$
 $= 16 - 12i - 12i + 9i^2 =$

 41. $(-5 + i)^2 = _$
 42. $(-3 - 2i)^2 = _$

39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$

= $(2 + 5i)(2 + 5i) =$
= $4 + 10i + 10i + 25i^2 =$
40. $(4 - 3i)^2 = \underline{-4 - 3i}(4 - 3i) =$
= $16 - 12i - 12i + 9i^2 =$

41. $(-5+i)^2 =$

$$= 16 - 12i - 12i + 9i^2 =$$

42.
$$(-3-2i)^2 =$$

39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$

= $(2 + 5i)(2 + 5i) =$
= $4 + 10i + 10i + 25i^2 =$
40. $(4 - 3i)^2 = \underline{-4 - 3i}(4 - 3i) =$
= $16 - 12i - 12i + 9i^2 =$

41. $(-5 + i)^2 =$

42.
$$(-3-2i)^2 =$$

39.
$$(2+5i)^2 = \underline{-21+20i}$$

= $(2+5i)(2+5i) =$
= $4+10i+10i+25i^2 =$
40. $(4-3i)^2 = \underline{7}$
= $(4-3i)(4-3i) =$
 $= 16-12i-12i+9i^2$

41. $(-5+i)^2 =$

$$= 16 - 12i - 12i + 9i^2 =$$

42.
$$(-3-2i)^2 =$$

39.
$$(2+5i)^2 = \underline{-21+20i}$$

= $(2+5i)(2+5i) =$
= $4+10i+10i+25i^2 =$
40. $(4-3i)^2 = \underline{7}$
= $(4-3i)(4-3i) =$
= $16-12i-12i+9i^2 =$

41. $(-5 + i)^2 =$

$$= 16 - 12i - 12i + 9i^2 =$$

42.
$$(-3-2i)^2 =$$

39.
$$(2+5i)^2 = \underline{-21+20i}$$

= $(2+5i)(2+5i) =$
= $4+10i+10i+25i^2 =$
40. $(4-3i)^2 = \underline{7-24i}$
= $(4-3i)(4-3i) =$
 40
= $16-12i-12i+9i^2 =$

41. $(-5+i)^2 =$

$$= 16 - 12i - 12i + 9i^2 =$$

42.
$$(-3-2i)^2 =$$

39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$
 40. $(4 - 3i)^2 = \underline{7 - 24i}$
 $= (2 + 5i)(2 + 5i) =$
 $= (4 - 3i)(4 - 3i) =$
 $= 4 + 10i + 10i + 25i^2 =$
 $= 16 - 12i - 12i + 9i^2 =$

41. $(-5 + i)^2 =$ 42. $(-3 - 2i)^2 =$

39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$
 40. $(4 - 3i)^2 = \underline{7 - 24i}$
 $= (2 + 5i)(2 + 5i) =$
 $= (4 - 3i)(4 - 3i) =$

 $= 4 + 10i + 10i + 25i^2 =$

41. $(-5+i)^2 =$

$$= 16 - 12i - 12i + 9i^2 =$$

42.
$$(-3-2i)^2 =$$

39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$
40. $(4 - 3i)^2 = \underline{7 - 24i}$ $= (2 + 5i)(2 + 5i) =$ $= (4 - 3i)(4 - 3i) =$

 $= 4 + 10i + 10i + 25i^2 =$

41. $(-5 + i)^2 =$ ______ = (-5 + i)(-5 + i)

$$= 16 - 12i - 12i + 9i^2 =$$

42.
$$(-3-2i)^2 =$$

39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$
 40. $(4 - 3i)^2 = \underline{7 - 24i}$
 $= (2 + 5i)(2 + 5i) =$
 $= (4 - 3i)(4 - 3i) =$

 $= 4 + 10i + 10i + 25i^2 =$

$$= 16 - 12i - 12i + 9i^2 =$$

41.
$$(-5 + i)^2 =$$

= $(-5 + i)(-5 + i) =$ _____

42.
$$(-3-2i)^2 =$$

39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$
40. $(4 - 3i)^2 = \underline{7 - 24i}$ $= (2 + 5i)(2 + 5i) =$ $= (4 - 3i)(4 - 3i) =$

$$= 4 + 10i + 10i + 25i^2 =$$

41

$$= (4 - 3i)(4 - 3i) =$$

$$(-5 + i)^{2} = \underline{\qquad}$$

$$= (-5 + i)(-5 + i) = \underline{\qquad}$$

$$= 25$$

$$= 16 - 12i - 12i + 9i^2 =$$

42.
$$(-3-2i)^2 =$$

39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$
40. $(4 - 3i)^2 = \underline{7 - 24i}$ $= (2 + 5i)(2 + 5i) =$ $= (4 - 3i)(4 - 3i) =$

$$= 4 + 10i + 10i + 25i^2 =$$

 $= 16 - 12i - 12i + 9i^2 =$

41.
$$(-5 + i)^2 =$$

= $(-5 + i)(-5 + i) =$ _____
= 25

42.
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$$= 4 + 10i + 10i + 25i^2 =$$

41.
$$(-5 + i)^2 =$$

= $(-5 + i)(-5 + i) =$ _____
= $25 - 5i$

 $= 16 - 12i - 12i + 9i^2 =$

42.
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39.
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 40. $(4 - 3i)^2 = \underline{7 - 24i}$
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 $= (4 - 3i)(4 - 3i) =$

 $= 4 + 10i + 10i + 25i^2 =$

$$= 16 - 12i - 12i + 9i^2 =$$

41.
$$(-5 + i)^2 =$$

= $(-5 + i)(-5 + i) =$
= $25 - 5i$

42.
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39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$
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 $= (4 - 3i)(4 - 3i) =$

 $= 4 + 10i + 10i + 25i^2 =$

$$= 16 - 12i - 12i + 9i^2 =$$

41.
$$(-5 + i)^2 =$$

= $(-5 + i)(-5 + i) =$
= $25 - 5i - 5i$

42.
$$(-3-2i)^2 =$$

39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$
 40. $(4 - 3i)^2 = \underline{7 - 24i}$
 $= (2 + 5i)(2 + 5i) =$
 $= (4 - 3i)(4 - 3i) =$

 $= 4 + 10i + 10i + 25i^2 =$

$$= 16 - 12i - 12i + 9i^2 =$$

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$$= 4 + 10i + 10i + 25i^2 =$$

 $= 16 - 12i - 12i + 9i^2 =$

41. $(-5 + i)^2 =$ = (-5 + i)(-5 + i) == $25 - 5i - 5i + i^2$

42.
$$(-3-2i)^2 =$$

39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$
 40. $(4 - 3i)^2 = \underline{7 - 24i}$
 $= (2 + 5i)(2 + 5i) =$
 $= (4 - 3i)(4 - 3i) =$

 $= 4 + 10i + 10i + 25i^2 =$

41.
$$(-5 + i)^2 =$$

= $(-5 + i)(-5 + i) =$

$$= 25 - 5i - 5i + i^2 =$$

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 $= 4 + 10i + 10i + 25i^2 =$

41. $(-5 + i)^2 =$ = (-5 + i)(-5 + i) == $25 - 5i - 5i + i^2 =$

 $= 16 - 12i - 12i + 9i^2 =$

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 $= 4 + 10i + 10i + 25i^2 =$

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= $25 - 5i - 5i + i^2 =$

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39.
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40. $(4 - 3i)^2 = \underline{7 - 24i}$ $= (2 + 5i)(2 + 5i) =$ $= (4 - 3i)(4 - 3i) =$

$$= 4 + 10i + 10i + 25i^2 =$$

$$= 16 - 12i - 12i + 9i^2 =$$

41.
$$(-5 + i)^2 = \underline{24}$$

= $(-5 + i)(-5 + i) =$
 \downarrow
= $25 - 5i - 5i + i^2 =$

42.
$$(-3-2i)^2 =$$

39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$
40. $(4 - 3i)^2 = \underline{7 - 24i}$ $= (2 + 5i)(2 + 5i) =$ $= (4 - 3i)(4 - 3i) =$

 $= 4 + 10i + 10i + 25i^2 =$

$$= 16 - 12i - 12i + 9i^2 =$$

41.
$$(-5 + i)^2 = \underline{24}$$

= $(-5 + i)(-5 + i) =$
 \downarrow \downarrow
= $25 - 5i - 5i + i^2 =$

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 $= 4 + 10i + 10i + 25i^2 =$

$$= 16 - 12i - 12i + 9i^2 =$$

41.
$$(-5 + i)^2 = \underline{24 - 10i}$$

= $(-5 + i)(-5 + i) =$
 \downarrow \downarrow
= $25 - 5i - 5i + i^2 =$

42.
$$(-3-2i)^2 =$$

39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$
 40. $(4 - 3i)^2 = \underline{7 - 24i}$
 $= (2 + 5i)(2 + 5i) =$
 $= (4 - 3i)(4 - 3i) =$

$$= 4 + 10i + 10i + 25i^2 =$$

1.
$$(-5 + i)^2 = 24 - 10i$$

= $(-5 + i)(-5 + i) =$

 $= 25 - 5i - 5i + i^2 =$

4

$$= 16 - 12i - 12i + 9i^2 =$$

42.
$$(-3-2i)^2 =$$

39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$
40. $(4 - 3i)^2 = \underline{7 - 24i}$ $= (2 + 5i)(2 + 5i) =$ $= (4 - 3i)(4 - 3i) =$

$$= 4 + 10i + 10i + 25i^2 =$$

 $= 16 - 12i - 12i + 9i^2 =$

- --- --- ---

41.
$$(-5 + i)^2 = 24 - 10i$$

= $(-5 + i)(-5 + i) =$

 $= 25 - 5i - 5i + i^2 =$

42.
$$(-3 - 2i)^2 =$$

39.
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40. $(4 - 3i)^2 = \underline{7 - 24i}$ $= (2 + 5i)(2 + 5i) =$ $= (4 - 3i)(4 - 3i) =$

$$= 4 + 10i + 10i + 25i^2 =$$

$$= 16 - 12i - 12i + 9i^2 =$$

41. $(-5 + i)^2 = 24 - 10i$ = (-5 + i)(-5 + i) =

 $= 25 - 5i - 5i + i^2 =$

42. $(-3 - 2i)^2 =$ = (-3 - 2i)(-3 - 2i)

39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$
40. $(4 - 3i)^2 = \underline{7 - 24i}$ $= (2 + 5i)(2 + 5i) =$ $= (4 - 3i)(4 - 3i) =$

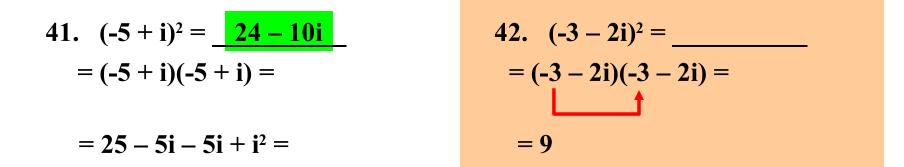
 $= 4 + 10i + 10i + 25i^2 =$

 $= 16 - 12i - 12i + 9i^2 =$

41. $(-5 + i)^2 = 24 - 10i$ = (-5 + i)(-5 + i) == $25 - 5i - 5i + i^2 =$ 42. $(-3 - 2i)^2 =$ = (-3 - 2i)(-3 - 2i) == =

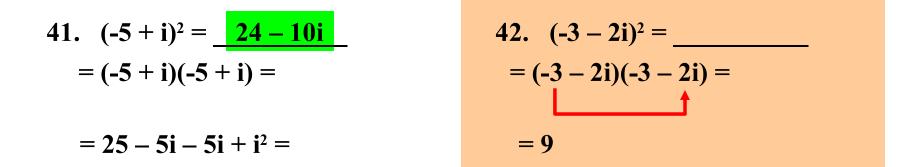
39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$
40. $(4 - 3i)^2 = \underline{7 - 24i}$ $= (2 + 5i)(2 + 5i) =$ $= (4 - 3i)(4 - 3i) =$

 $= 4 + 10i + 10i + 25i^2 = = 16 - 12i - 12i + 9i^2 =$



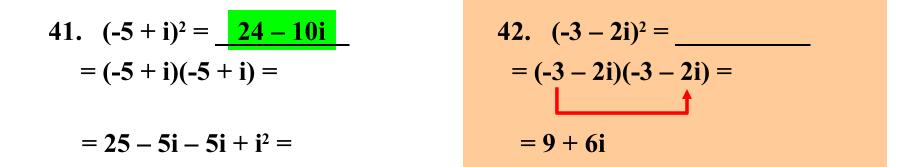
39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$
40. $(4 - 3i)^2 = \underline{7 - 24i}$ $= (2 + 5i)(2 + 5i) =$ $= (4 - 3i)(4 - 3i) =$

 $= 4 + 10i + 10i + 25i^2 = = 16 - 12i - 12i + 9i^2 =$



39.
$$(2 + 5i)^2 = _ -21 + 20i$$
 40. $(4 - 3i)^2 = _ 7 - 24i$
 $= (2 + 5i)(2 + 5i) =$
 $= (4 - 3i)(4 - 3i) =$

 $= 4 + 10i + 10i + 25i^2 = = 16 - 12i - 12i + 9i^2 =$



39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$
40. $(4 - 3i)^2 = \underline{7 - 24i}$ $= (2 + 5i)(2 + 5i) =$ $= (4 - 3i)(4 - 3i) =$

 $= 4 + 10i + 10i + 25i^2 = = 16 - 12i - 12i + 9i^2 =$

41. $(-5 + i)^2 = 24 - 10i$ = (-5 + i)(-5 + i) == $25 - 5i - 5i + i^2 =$ 42. $(-3 - 2i)^2 = 2$ = (-3 - 2i)(-3 - 2i) == 9 + 6i

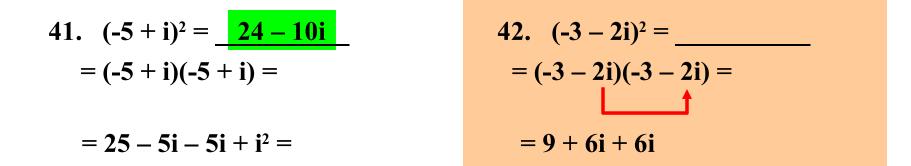
39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$
40. $(4 - 3i)^2 = \underline{7 - 24i}$ $= (2 + 5i)(2 + 5i) =$ $= (4 - 3i)(4 - 3i) =$

 $= 4 + 10i + 10i + 25i^2 = = 16 - 12i - 12i + 9i^2 =$

41. $(-5 + i)^2 = 24 - 10i$ = (-5 + i)(-5 + i) == $25 - 5i - 5i + i^2 =$ 42. $(-3 - 2i)^2 =$ = (-3 - 2i)(-3 - 2i) == 9 + 6i + 6i

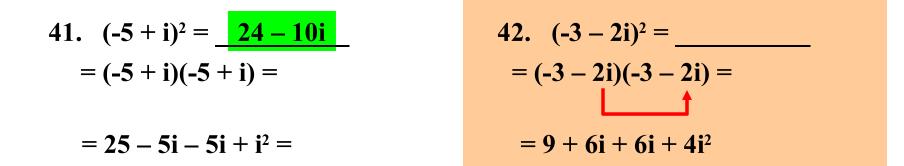
39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$
40. $(4 - 3i)^2 = \underline{7 - 24i}$ $= (2 + 5i)(2 + 5i) =$ $= (4 - 3i)(4 - 3i) =$

 $= 4 + 10i + 10i + 25i^2 = = 16 - 12i - 12i + 9i^2 =$



39.
$$(2 + 5i)^2 = _ -21 + 20i$$
 40. $(4 - 3i)^2 = _ 7 - 24i$
 $= (2 + 5i)(2 + 5i) =$
 $= (4 - 3i)(4 - 3i) =$

 $= 4 + 10i + 10i + 25i^2 = = 16 - 12i - 12i + 9i^2 =$



39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$
40. $(4 - 3i)^2 = \underline{7 - 24i}$ $= (2 + 5i)(2 + 5i) =$ $= (4 - 3i)(4 - 3i) =$

 $= 4 + 10i + 10i + 25i^2 = = 16 - 12i - 12i + 9i^2 =$

41.
$$(-5 + i)^2 = \underline{24 - 10i}$$

= $(-5 + i)(-5 + i) =$
= $25 - 5i - 5i + i^2 =$
42. $(-3 - 2i)^2 = \underline{-3 - 2i}(-3 - 2i) =$
= $9 + 6i + 6i + 4i^2 =$

39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$
40. $(4 - 3i)^2 = \underline{7 - 24i}$ $= (2 + 5i)(2 + 5i) =$ $= (4 - 3i)(4 - 3i) =$

 $= 4 + 10i + 10i + 25i^2 = = 16 - 12i - 12i + 9i^2 =$

41.
$$(-5 + i)^2 = \underline{24 - 10i}$$

= $(-5 + i)(-5 + i) =$
= $25 - 5i - 5i + i^2 =$
42. $(-3 - 2i)^2 = \underline{42}$
= $(-3 - 2i)(-3 - 2i) = \underline{42}$
= $9 + 6i + 6i + 4i^2 =$

39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$
40. $(4 - 3i)^2 = \underline{7 - 24i}$ $= (2 + 5i)(2 + 5i) =$ $= (4 - 3i)(4 - 3i) =$

 $= 4 + 10i + 10i + 25i^2 = = 16 - 10i^2$

 $= 16 - 12i - 12i + 9i^2 =$

39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$
40. $(4 - 3i)^2 = \underline{7 - 24i}$ $= (2 + 5i)(2 + 5i) =$ $= (4 - 3i)(4 - 3i) =$

 $= 4 + 10i + 10i + 25i^2 = = 1$

 $= 16 - 12i - 12i + 9i^2 =$

41. $(-5 + i)^2 = \underline{24 - 10i}$ = (-5 + i)(-5 + i) == $25 - 5i - 5i + i^2 =$ 42. $(-3 - 2i)^2 = \underline{5}$ = (-3 - 2i)(-3 - 2i) == $9 + 6i + 6i + 4i^2 =$

39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$
40. $(4 - 3i)^2 = \underline{7 - 24i}$ $= (2 + 5i)(2 + 5i) =$ $= (4 - 3i)(4 - 3i) =$

 $= 4 + 10i + 10i + 25i^2 = = 16 - 12i$

 $= 16 - 12i - 12i + 9i^2 =$

41. $(-5 + i)^2 = \underline{24 - 10i}$ = (-5 + i)(-5 + i) == $25 - 5i - 5i + i^2 =$ 42. $(-3 - 2i)^2 = \underline{5}$ = (-3 - 2i)(-3 - 2i) = $= 9 + 6i + 6i + 4i^2 =$

39.
$$(2 + 5i)^2 = _ -21 + 20i$$
 40. $(4 - 3i)^2 = _ 7 - 24i$
 $= (2 + 5i)(2 + 5i) =$
 $= (4 - 3i)(4 - 3i) =$

 $= 4 + 10i + 10i + 25i^2 = = 16 - 12i - 12i + 9i^2 =$

41. $(-5+i)^2 = 24 - 10i$	42. $(-3-2i)^2 = 5+12i$
= (-5 + i)(-5 + i) =	=(-3-2i)(-3-2i)=
	\downarrow \downarrow
$= 25 - 5i - 5i + i^2 =$	$= 9 + 6i + 6i + 4i^2 =$

39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$
40. $(4 - 3i)^2 = \underline{7 - 24i}$ $= (2 + 5i)(2 + 5i) =$ $= (4 - 3i)(4 - 3i) =$

 $= 4 + 10i + 10i + 25i^2 = = 16 - 12i - 12i + 9i^2 =$

41. $(-5 + i)^2 = 24 - 10i$	42. $(-3 - 2i)^2 = 5 + 12i$
= $(-5 + i)(-5 + i) =$	= $(-3 - 2i)(-3 - 2i) =$
$= 25 - 5i - 5i + i^2 =$	$= 9 + 6i + 6i + 4i^2 =$

39.
$$(2 + 5i)^2 = \underline{-21 + 20i}$$
 40. $(4 - 3i)^2 = \underline{7 - 24i}$
 $= (2 + 5i)(2 + 5i) =$
 $= (4 - 3i)(4 - 3i) =$

 $= 4 + 10i + 10i + 25i^{2} = = 16 - 12i - 12i + 9i^{2} =$

41.
$$(-5 + i)^2 = 24 - 10i$$

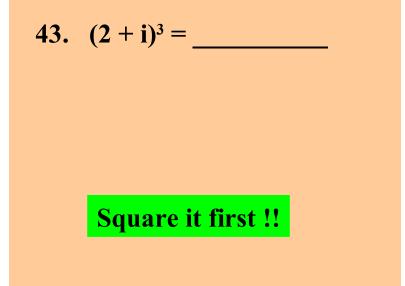
= $(-5 + i)(-5 + i) =$
42. $(-3 - 2i)^2 = 5 + 12i$
= $(-3 - 2i)(-3 - 2i) =$

$$= 25 - 5i - 5i + i^2 = = 9 + 6i + 6i + 4i^2 =$$

43. $(2 + i)^3 =$ 44. $(1 - 2i)^3 =$

43. $(2 + i)^3 =$ _____

44.
$$(1-2i)^3 =$$



44.
$$(1-2i)^3 =$$

43. (2 + i)³ = _____ (2 + i)² = Square it first !!

44.
$$(1-2i)^3 =$$

43. $(2 + i)^3 =$ _____ $(2 + i)^2 = (2 + i)(2 + i)$ Square it first !!

44.
$$(1-2i)^3 =$$

43.
$$(2 + i)^3 =$$

 $(2 + i)^2 = (2 + i)(2 + i) =$ _____
=
Square it first !!

44.
$$(1-2i)^3 =$$

43.
$$(2 + i)^3 =$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
 $= 4$
Square it first !!

44.
$$(1-2i)^3 =$$

43.
$$(2 + i)^3 =$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
 $= 4$
Square it first !!

44.
$$(1-2i)^3 =$$

43.
$$(2 + i)^3 =$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
 $= 4 + 2i$
Square it first !!

44.
$$(1-2i)^3 =$$

43.
$$(2 + i)^3 =$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
 $= 4 + 2i$
Square it first !!

44.
$$(1-2i)^3 =$$

43.
$$(2 + i)^3 =$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
 $= 4 + 2i + 2i$
Square it first !!

44.
$$(1-2i)^3 =$$

43.
$$(2 + i)^3 =$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
 $= 4 + 2i + 2i$
Square it first !!

44.
$$(1-2i)^3 =$$

43.
$$(2 + i)^3 =$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
 $= 4 + 2i + 2i + i^2$
Square it first !!

44.
$$(1-2i)^3 =$$

43. $(2 + i)^3 =$ _____ $(2 + i)^2 = (2 + i)(2 + i) =$ $= 4 + 2i + 2i + i^2 =$ Square it first !!

44.
$$(1-2i)^3 =$$

43.
$$(2 + i)^3 =$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
 $= 4 + 2i + 2i + i^2 =$
Square it first !!

44.
$$(1-2i)^3 =$$

43.
$$(2 + i)^3 =$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
 $= 4 + 2i + 2i + i^2 =$
Square it first !!

44.
$$(1-2i)^3 =$$

43.
$$(2 + i)^3 =$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
 $= 4 + 2i + 2i + i^2 = 3$
Square it first !!

44.
$$(1-2i)^3 =$$

43.
$$(2 + i)^3 =$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
 $\downarrow \qquad \downarrow$
 $= 4 + 2i + 2i + i^2 = 3$
Square it first !!

44.
$$(1-2i)^3 =$$

43.
$$(2 + i)^3 =$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
 $= 4 + 2i + 2i + i^2 = 3 + 4i$
Square it first !!

44.
$$(1-2i)^3 =$$

43.
$$(2 + i)^3 =$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
 $= 4 + 2i + 2i + i^2 = 3 + 4i$
Square it first !!

44.
$$(1-2i)^3 =$$

43. $(2 + i)^3 =$ $(2 + i)^2 = (2 + i)(2 + i) =$ $= 4 + 2i + 2i + i^2 = 3 + 4i$

44.
$$(1-2i)^3 =$$

43.
$$(2 + i)^3 =$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
 $= 4 + 2i + 2i + i^2 = 3 + 4i$
 $(2 + i)^3 =$

44.
$$(1-2i)^3 =$$

43.
$$(2 + i)^3 =$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
 $= 4 + 2i + 2i + i^2 = 3 + 4i$
 $(2 + i)^3 = (2 + i)(3 + 4i)$

44.
$$(1-2i)^3 =$$

43.
$$(2 + i)^3 =$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
 $= 4 + 2i + 2i + i^2 = 3 + 4i$
 $(2 + i)^3 = (2 + i)(3 + 4i) =$
 $=$

44.
$$(1-2i)^3 =$$

43.
$$(2 + i)^3 =$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
 $= 4 + 2i + 2i + i^2 = 3 + 4i$
 $(2 + i)^3 = (2 + i)(3 + 4i) =$
 $= 6$

44.
$$(1-2i)^3 =$$

43.
$$(2 + i)^3 =$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
 $= 4 + 2i + 2i + i^2 = 3 + 4i$
 $(2 + i)^3 = (2 + i)(3 + 4i) =$
 $= 6$

44.
$$(1-2i)^3 =$$

43.
$$(2 + i)^3 =$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
 $= 4 + 2i + 2i + i^2 = 3 + 4i$
 $(2 + i)^3 = (2 + i)(3 + 4i) =$
 $= 6 + 8i$

44.
$$(1-2i)^3 =$$

43.
$$(2 + i)^3 =$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
 $= 4 + 2i + 2i + i^2 = 3 + 4i$
 $(2 + i)^3 = (2 + i)(3 + 4i) =$
 $= 6 + 8i$

44.
$$(1-2i)^3 =$$

43.
$$(2 + i)^3 =$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
 $= 4 + 2i + 2i + i^2 = 3 + 4i$
 $(2 + i)^3 = (2 + i)(3 + 4i) =$
 $= 6 + 8i + 3i$

44.
$$(1-2i)^3 =$$

43.
$$(2 + i)^3 =$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
 $= 4 + 2i + 2i + i^2 = 3 + 4i$
 $(2 + i)^3 = (2 + i)(3 + 4i) =$
 $= 6 + 8i + 3i$

44.
$$(1-2i)^3 =$$

43.
$$(2 + i)^3 =$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
 $= 4 + 2i + 2i + i^2 = 3 + 4i$
 $(2 + i)^3 = (2 + i)(3 + 4i) =$
 $= 6 + 8i + 3i + 4i^2$

44.
$$(1-2i)^3 =$$

43.
$$(2 + i)^3 =$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
 $= 4 + 2i + 2i + i^2 = 3 + 4i$
 $(2 + i)^3 = (2 + i)(3 + 4i) =$
 $= 6 + 8i + 3i + 4i^2 =$

44.
$$(1-2i)^3 =$$

43.
$$(2 + i)^3 =$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
 $= 4 + 2i + 2i + i^2 = 3 + 4i$
 $(2 + i)^3 = (2 + i)(3 + 4i) =$
 $= 6 + 8i + 3i + 4i^2 =$

44.
$$(1-2i)^3 =$$

43.
$$(2 + i)^3 =$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
 $= 4 + 2i + 2i + i^2 = 3 + 4i$
 $(2 + i)^3 = (2 + i)(3 + 4i) =$
 $= 6 + 8i + 3i + 4i^2 =$

44.
$$(1-2i)^3 =$$

43.
$$(2 + i)^3 = \underline{2}$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
 $= 4 + 2i + 2i + i^2 = 3 + 4i$
 $(2 + i)^3 = (2 + i)(3 + 4i) =$
 $= 6 + 8i + 3i + 4i^2 =$

44.
$$(1-2i)^3 =$$

43.
$$(2 + i)^3 = \underline{2}$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
 $= 4 + 2i + 2i + i^2 = 3 + 4i$
 $(2 + i)^3 = (2 + i)(3 + 4i) =$
 \downarrow \downarrow
 $= 6 + 8i + 3i + 4i^2 =$

44.
$$(1-2i)^3 =$$

43. $(2 + i)^3 = \underline{2 + 11i}$ $(2 + i)^2 = (2 + i)(2 + i) =$ $= 4 + 2i + 2i + i^2 = 3 + 4i$ $(2 + i)^3 = (2 + i)(3 + 4i) =$ \downarrow \downarrow \downarrow $= 6 + 8i + 3i + 4i^2 =$

44.
$$(1-2i)^3 =$$

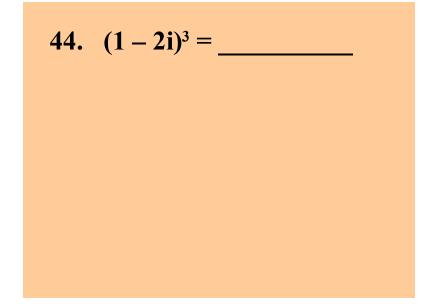
43.
$$(2 + i)^3 = \underline{2 + 11i}$$

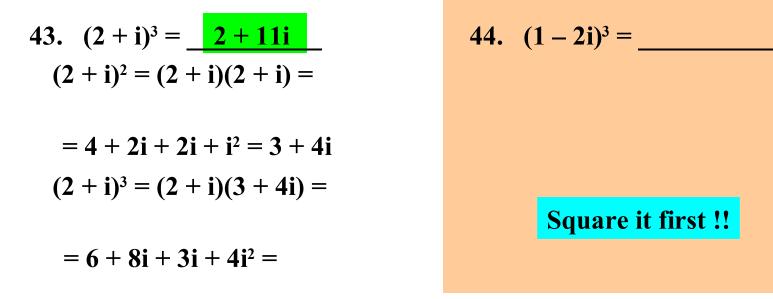
 $(2 + i)^2 = (2 + i)(2 + i) =$
 $= 4 + 2i + 2i + i^2 = 3 + 4i$
 $(2 + i)^3 = (2 + i)(3 + 4i) =$
 $= 6 + 8i + 3i + 4i^2 =$

44.
$$(1-2i)^3 =$$

43.
$$(2 + i)^3 = \underline{2 + 11i}$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
 $= 4 + 2i + 2i + i^2 = 3 + 4i$
 $(2 + i)^3 = (2 + i)(3 + 4i) =$
 $= 6 + 8i + 3i + 4i^2 =$





43.
$$(2 + i)^3 = \underline{2 + 11i}$$

 $(2 + i)^2 = (2 + i)(2 + i) =$

 $= 4 + 2i + 2i + i^2 = 3 + 4i$
 $(2 + i)^3 = (2 + i)(3 + 4i) =$

 $= 6 + 8i + 3i + 4i^2 =$

44. $(1 - 2i)^3 = \underline{(1 - 2i)^2} =$

(1 - 2i)² =

43.
$$(2 + i)^3 = \underline{2 + 11i}$$

 $(2 + i)^2 = (2 + i)(2 + i) =$

 $= 4 + 2i + 2i + i^2 = 3 + 4i$
 $(2 + i)^3 = (2 + i)(3 + 4i) =$

 $= 6 + 8i + 3i + 4i^2 =$

44. $(1 - 2i)^3 = \underline{(1 - 2i)(1 - 2i)}$
 $(1 - 2i)^2 = (1 - 2i)(1 - 2i)$

Square it first !!

43.
$$(2 + i)^3 = \underline{2 + 11i}$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
 $= 4 + 2i + 2i + i^2 = 3 + 4i$
 $(2 + i)^3 = (2 + i)(3 + 4i) =$
 $= 6 + 8i + 3i + 4i^2 =$

44.
$$(1-2i)^3 = _$$

 $(1-2i)^2 = (1-2i)(1-2i) =$
=
Square it first !!

43.
$$(2 + i)^3 = \underline{2 + 11i}$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
 $= 4 + 2i + 2i + i^2 = 3 + 4i$
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 $= 6 + 8i + 3i + 4i^2 =$

44.
$$(1-2i)^3 =$$

 $(1-2i)^2 = (1-2i)(1-2i) =$
= 1
Square it first !!

43.
$$(2 + i)^3 = \underline{2 + 11i}$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
 $= 4 + 2i + 2i + i^2 = 3 + 4i$
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44.
$$(1-2i)^3 =$$

 $(1-2i)^2 = (1-2i)(1-2i) =$
= 1
Square it first !!

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$$(2 + i)^3 = \underline{2 + 11i}$$

 $(2 + i)^2 = (2 + i)(2 + i) =$

 $= 4 + 2i + 2i + i^2 = 3 + 4i$
 $(2 + i)^3 = (2 + i)(3 + 4i) =$

 $= 6 + 8i + 3i + 4i^2 =$

44. $(1 - 2i)^2 = (1 - 2i)^2 =$

 $= 1 - 2i$
Square

44.
$$(1-2i)^3 =$$

 $(1-2i)^2 = (1-2i)(1-2i) =$
 $= 1-2i$
Square it first !!

43.
$$(2 + i)^3 = \underline{2 + 11i}$$

 $(2 + i)^2 = (2 + i)(2 + i) =$

 $= 4 + 2i + 2i + i^2 = 3 + 4i$
 $(2 + i)^3 = (2 + i)(3 + 4i) =$

 $= 6 + 8i + 3i + 4i^2 =$

44. $(1 - 2i)^2 =$
 $= 1 - 2i$
Square

44.
$$(1-2i)^3 =$$

 $(1-2i)^2 = (1-2i)(1-2i) =$
 $= 1-2i$
Square it first !!

43.
$$(2 + i)^3 = 2 + 11i$$

 $(2 + i)^2 = (2 + i)(2 + i) =$

 $= 4 + 2i + 2i + i^2 = 3 + 4i$
 $(2 + i)^3 = (2 + i)(3 + 4i) =$

 $= 6 + 8i + 3i + 4i^2 =$

44. $(1 - 2i)(1 - 2i)^2 =$

 $= 1 - 2i - 3i^2$

44.
$$(1-2i)^3 =$$

 $(1-2i)^2 = (1-2i)(1-2i) =$
 $= 1-2i-2i$
Square it first !!

43.
$$(2 + i)^3 = 2 + 11i$$

 $(2 + i)^2 = (2 + i)(2 + i) =$

 $= 4 + 2i + 2i + i^2 = 3 + 4i$
 $(2 + i)^3 = (2 + i)(3 + 4i) =$

 $= 6 + 8i + 3i + 4i^2 =$

44. $(1 - 2i)^3$
 $(1 - 2i)^2 = (2 + i)^3$
 $= 1 - 2i - 2i$
Squar

44.
$$(1-2i)^3 =$$

 $(1-2i)^2 = (1-2i)(1-2i) =$
 $= 1-2i-2i$
Square it first !!

43.
$$(2 + i)^3 = \underline{2 + 11i}$$

 $(2 + i)^2 = (2 + i)(2 + i) =$

 $= 4 + 2i + 2i + i^2 = 3 + 4i$
 $(2 + i)^3 = (2 + i)(3 + 4i) =$

 $= 6 + 8i + 3i + 4i^2 =$

44. $(1 - 2i)^3 = (1 - 2i)^2 =$

44. $(1-2i)^3 =$ _____ $(1-2i)^2 = (1-2i)(1-2i) =$ $= 1-2i - 2i + 4i^2$ Square it first !!

-2i) =

!!

43.
$$(2 + i)^3 = \underline{2 + 11i}$$

 $(2 + i)^2 = (2 + i)(2 + i) =$

 $= 4 + 2i + 2i + i^2 = 3 + 4i$
 $(2 + i)^3 = (2 + i)(3 + 4i) =$

 $= 6 + 8i + 3i + 4i^2 =$

44. $(1 - 2i)^3 = \underline{(1 - 2i)(1 + 1)}$
 $= 1 - 2i - 2i + 4i^2 =$

Square it first

43.
$$(2 + i)^3 = \underline{2 + 11i}$$

 $(2 + i)^2 = (2 + i)(2 + i) =$

 $= 4 + 2i + 2i + i^2 = 3 + 4i$
 $(2 + i)^3 = (2 + i)(3 + 4i) =$

 $= 6 + 8i + 3i + 4i^2 =$

44. $(1 - 2i)^3$
 $(1 - 2i)^2 = (1 - 2i)^3$
 $= 1 - 2i - 2i$
Square

44.
$$(1-2i)^3 =$$

 $(1-2i)^2 = (1-2i)(1-2i) =$
 $= 1-2i - 2i + 4i^2 =$
Square it first !!

43.
$$(2 + i)^3 = \underline{2 + 11i}$$

 $(2 + i)^2 = (2 + i)(2 + i) =$

 $= 4 + 2i + 2i + i^2 = 3 + 4i$
 $(2 + i)^3 = (2 + i)(3 + 4i) =$

 $= 6 + 8i + 3i + 4i^2 =$

44. $(1 - 2i)^2 = 4i^2 = 1 - 2i - 12i^2 = 12i^2 =$

44.
$$(1-2i)^3 =$$

 $(1-2i)^2 = (1-2i)(1-2i) =$
 \downarrow \downarrow
 $= 1-2i - 2i + 4i^2 =$
Square it first !!

43.
$$(2 + i)^3 = 2 + 11i$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
 $= 4 + 2i + 2i + i^2 = 3 + 4i$
 $(2 + i)^3 = (2 + i)(3 + 4i) =$
 $= 6 + 8i + 3i + 4i^2 =$
44. $(1 - 2i)^3$
 $(1 - 2i)^2 = (1 + i)^3$
 $= 1 - 2i - 2i$
Square

44.
$$(1-2i)^3 = _$$

 $(1-2i)^2 = (1-2i)(1-2i) =$
 $\downarrow \qquad \downarrow$
 $= 1-2i-2i+4i^2 = -3$
Square it first !!

43.
$$(2 + i)^{3} = \underline{2 + 11i}$$

 $(2 + i)^{2} = (2 + i)(2 + i) =$
 $= 4 + 2i + 2i + i^{2} = 3 + 4i$
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Square it first !!

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$$(2 + i)^3 = \underline{2 + 11i}$$

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44. $(1 - 2i)^3 = \underline{(1 - 2i)(1 - 2i)} =$
 $= 1 - 2i - 2i + 4i^2 = -3 - 4i$

Square it first !!

-2i) =

43.
$$(2 + i)^3 = \underline{2 + 11i}$$

 $(2 + i)^2 = (2 + i)(2 + i) =$

 $= 4 + 2i + 2i + i^2 = 3 + 4i$
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44. $(1 - 2i)^3 = \underline{(1 - 2i)(1 - 2i)} =$

 $= 1 - 2i - 2i + 4i^2 = -3 - 4i$

Square it first !!

-4i

43.
$$(2 + i)^3 = \underline{2 + 11i}$$

 $(2 + i)^2 = (2 + i)(2 + i) =$

 $= 4 + 2i + 2i + i^2 = 3 + 4i$
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 $(1 - 2i)^3 =$

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44. $(1 - 2i)^3 = \underline{(1 - 2i)(1 - 2i)} =$

 $= 1 - 2i - 2i + 4i^2 = -3 - 4i$
 $(1 - 2i)^3 = (1 - 2i)(-3 - 4i)$

43.
$$(2 + i)^3 = \underline{2 + 11i}$$
 44. $(1 - 2i)^3$
 $(2 + i)^2 = (2 + i)(2 + i) =$
 $(1 - 2i)^2 = (1 + i)^2$
 $= 4 + 2i + 2i + i^2 = 3 + 4i$
 $= 1 - 2i - 2i$
 $(2 + i)^3 = (2 + i)(3 + 4i) =$
 $(1 - 2i)^3 = (1 + 2i)^3 = (1 + 2i)^3$
 $= 6 + 8i + 3i + 4i^2 =$
 $=$

44.
$$(1-2i)^3 =$$

 $(1-2i)^2 = (1-2i)(1-2i) =$
 $= 1-2i-2i+4i^2 = -3-4i$
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$$(2 + i)^3 = \underline{2 + 11i}$$

 $(2 + i)^2 = (2 + i)(2 + i) =$

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 $= 1 - 2i - 2i + 4i^2 = -3 - 4i$
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 $= -3$

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$$(2 + i)^3 = \underline{2 + 11i}$$

 $(2 + i)^2 = (2 + i)(2 + i) =$

 $= 4 + 2i + 2i + i^2 = 3 + 4i$
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 $= 1 - 2i - 2i + 4i^2 = -3 - 4i$
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 $= -3$

2i) =

- 4i) =

43.
$$(2 + i)^3 = \underline{2 + 11i}$$

 $(2 + i)^2 = (2 + i)(2 + i) =$

 $= 4 + 2i + 2i + i^2 = 3 + 4i$
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 $= -3 - 4i$

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$$(2 + i)^3 = \underline{2 + 11i}$$
 44. $(1 - 2i)^3 = \underline{(1 - 2i)(1 - 2i)} = (1 - 2i)(1 - 2i) = (1 - 2i)(1$

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$$(2 + i)^3 = \underline{2 + 11i}$$

 $(2 + i)^2 = (2 + i)(2 + i) =$

 $= 4 + 2i + 2i + i^2 = 3 + 4i$
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44. $(1 - 2i)^3 = \underline{(1 - 2i)(1 - 2i)} =$

 $= 1 - 2i - 2i + 4i^2 = -3 - 4i$
 $(1 - 2i)^3 = (1 - 2i)(-3 - 4i) =$

 $= -3 - 4i + 6i$

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$$(2 + i)^3 = \underline{2 + 11i}$$

 $(2 + i)^2 = (2 + i)(2 + i) =$

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2i) =

- 4i) =

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$$(2 + i)^3 = \underline{2 + 11i}$$

 $(2 + i)^2 = (2 + i)(2 + i) =$

 $= 4 + 2i + 2i + i^2 = 3 + 4i$
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43.
$$(2 + i)^3 = \underline{2 + 11i}$$
 44. $(1 - 2i)^3 = \underline{(1 - 2i)(1 - 2i)} = (1 - 2i)(1 - 2i) = (1 - 2i)(1$

When multiplying complex numbers, first treat the number i like a variable. Second, remember that i is not a variable. If you get i² as part of your answer, replace it with -1. Note: since $i = \sqrt{-1}$, $i^2 = -1$.

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$$(2 + i)^3 = \underline{2 + 11i}$$

 $(2 + i)^2 = (2 + i)(2 + i) =$

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44. $(1 - 2i)^3 = \underline{(1 - 2i)(1 - 2i)} =$

 $= 1 - 2i - 2i + 4i^2 = -3 - 4i$
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 $= -3 - 4i + 6i + 8i^2 =$

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$$(2 + i)^3 = \underline{2 + 11i}$$

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44. $(1 - 2i)^3 = \underline{-11}$
 $(1 - 2i)^2 = (1 - 2i)(1 - 2i) =$

 $= 1 - 2i - 2i + 4i^2 = -3 - 4i$
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=

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 $(1 - 2i)^2 = (1 - 2i)(1 - 2i) =$

 $= 1 - 2i - 2i + 4i^2 = -3 - 4i$
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When multiplying complex numbers, first treat the <u>number i</u> like a variable. Second, remember that i is not a variable. If you get i² as part of your answer, replace it with -1. Note: since $i = \sqrt{-1}$, $i^2 = -1$.

-4i

4i) =

-4i

43.
$$(2 + i)^3 = \underline{2 + 11i}$$

 $(2 + i)^2 = (2 + i)(2 + i) =$

 $= 4 + 2i + 2i + i^2 = 3 + 4i$
 $(2 + i)^3 = (2 + i)(3 + 4i) =$

 $= 6 + 8i + 3i + 4i^2 =$

44. $(1 - 2i)^3 = \underline{-11 + 2i}$
 $(1 - 2i)^2 = (1 - 2i)(1 - 2i) =$

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$$(2 + i)^3 = \underline{2 + 11i}$$
 44. $(1 - 2i)^3 = \underline{-11 + 2i}$
 $(2 + i)^2 = (2 + i)(2 + i) =$
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 $= 1 - 2i - 2i + 4i^2 = -3 - 4i$
 $(2 + i)^3 = (2 + i)(3 + 4i) =$
 $(1 - 2i)^3 = (1 - 2i)(-3 - 4i)$
 $= 6 + 8i + 3i + 4i^2 =$
 $= -3 - 4i + 6i + 8i^2 =$

43.
$$(2 + i)^3 = \underline{2 + 11i}$$

 $(2 + i)^2 = (2 + i)(2 + i) =$
44. $(1 - 2i)^3 = \underline{-11 + 2i}$
 $(1 - 2i)^2 = (1 - 2i)(1 - 2i) =$

$$= 4 + 2i + 2i + i^{2} = 3 + 4i \qquad = 1 - 2i - 2i + 4i^{2} = -3 - 4i$$
$$(2 + i)^{3} = (2 + i)(3 + 4i) = (1 - 2i)^{3} = (1 - 2i)(-3 - 4i) =$$

 $= 6 + 8i + 3i + 4i^2 = = -3 - 4i + 6i + 8i^2 =$

When multiplying complex numbers, first treat the number i
like a variable. Second, remember that i is not a variable. If
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Note: since
$$i = \sqrt{-1}$$
, $i^2 = -1$.

 43. $(2 + i)^3 = \underline{2 + 11i}$ 44. $(1 - 2i)^3 = \underline{-11 + 2i}$
 $(2 + i)^2 = (2 + i)(2 + i) =$ $(1 - 2i)^2 = (1 - 2i)(1 - 2i) =$

 $= 4 + 2i + 2i + i^{2} = 3 + 4i = 1 - 2i - 2i + 4i^{2} = -3 - 4i$ $(2 + i)^{3} = (2 + i)(3 + 4i) = (1 - 2i)^{3} = (1 - 2i)(-3 - 4i) = (1 - 2i)(-3 - 4i) = 0$

Good luck on your homework !!