

### Rewriting and Simplifying Complex Numbers

In 1 – 16, express each number in terms of  $i$ , and simplify.

1.  $\sqrt{-36}$

$$i\sqrt{36}$$

$$\begin{array}{c} \wedge \\ 6\ 6 \end{array}$$

$$6i$$

2.  $\sqrt{-100}$

$$i\sqrt{100}$$

$$\begin{array}{c} \wedge \\ 10\ 10 \end{array}$$

$$10i$$

3.  $-\sqrt{-81}$

$$-i\sqrt{81}$$

$$\begin{array}{c} \wedge \\ 9\ 9 \end{array}$$

$$-9i$$

4.  $2\sqrt{-49}$

$$2i\sqrt{49}$$

$$\begin{array}{c} \wedge \\ 7\ 7 \end{array}$$

$$2 \cdot 7 \cdot i \rightarrow 14i$$

5.  $2\sqrt{-64}$

$$2i\sqrt{64}$$

$$\begin{array}{c} \wedge \\ 8\ 8 \end{array}$$

$$2 \cdot 8 \cdot i \rightarrow 16i$$

6.  $10\sqrt{-9}$

$$10i\sqrt{9}$$

$$\begin{array}{c} \wedge \\ 3\ 3 \end{array}$$

$$10 \cdot 3 \cdot i \rightarrow 30i$$

7.  $-3\sqrt{-144}$

$$-3i\sqrt{144}$$

$$\begin{array}{c} \wedge \\ 12\ 12 \end{array}$$

$$(-3)12i \rightarrow -36i$$

8.  $\sqrt{-25}$

$$i\sqrt{25}$$

$$\begin{array}{c} \wedge \\ 5\ 5 \end{array}$$

$$5i$$

|                                                                                                                                         |                                                                                                                                              |                                                                                                                                                                                     |                                                                                                                                                                                  |
|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>9. <math>\sqrt{-3}</math></p> <p><math>i\sqrt{3}</math></p>                                                                          | <p>10. <math>\sqrt{-29}</math></p> <p><math>i\sqrt{29}</math></p>                                                                            | <p>11. <math>3\sqrt{-11}</math></p> <p><math>3i\sqrt{11}</math></p>                                                                                                                 | <p>12. <math>-\sqrt{-10}</math></p> <p><math>-i\sqrt{10}</math></p>                                                                                                              |
| <p>13. <math>\sqrt{-20}</math></p> <p><math>i\sqrt{20}</math></p> <p>^</p> <p>4 5</p> <p>^</p> <p>22</p> <p><math>2i\sqrt{5}</math></p> | <p>14. <math>-\sqrt{-28}</math></p> <p><math>-i\sqrt{28}</math></p> <p>^</p> <p>14 2</p> <p>^</p> <p>7 2</p> <p><math>-2i\sqrt{7}</math></p> | <p>15. <math>2\sqrt{-75}</math></p> <p><math>2i\sqrt{75}</math></p> <p>^</p> <p>25 3</p> <p>^</p> <p>5 5</p> <p><math>2 \cdot 5i\sqrt{3}</math></p> <p><math>10i\sqrt{3}</math></p> | <p>16. <math>5\sqrt{-8}</math></p> <p><math>5i\sqrt{8}</math></p> <p>^</p> <p>4 2</p> <p>^</p> <p>2 2</p> <p><math>2 \cdot 5i\sqrt{2}</math></p> <p><math>10i\sqrt{2}</math></p> |

Rewrite the following the imaginary numbers in radical form.

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

$$5i = \sqrt{-25}$$

$$13i = \sqrt{-169}$$

Identify the Imaginary Part and the Real Part of the Complex Numbers below.

$5-3i$   $\longrightarrow$  5 is Real,  $-3i$  is imaginary

$-1+4i$   $\longrightarrow$   $-1$  is Real,  $4i$  is imaginary

$3i$   $\longrightarrow$  0 is Real,  $3i$  is imaginary

$7$   $\longrightarrow$  7 is Real, 0 is imaginary