Algebra 2 **Name**_____
Notes: 3.2 **Date**_____ **Block**____

***Core Concept: The Square Root of a Negative Number**

If *r* is a positive real number, then _____.

Example:

By the first property, it follows that _____.

Example:

(1) Find the square root of each number.

a. $\sqrt{-25}$ b. $\sqrt{-72}$ c. $-5\sqrt{-9}$

d. $\sqrt{-4}$ e. $\sqrt{-12}$

f. $-\sqrt{-36}$ g. $2\sqrt{-54}$

(2) Find the values of *x* and *y* that satisfy the equation.

a. $2x - 7i = 10 + yi$.

b. $x + 3i = 9 - yi$

c. $9 + 4yi = -2x + 3i$

***Core Concept: Sums and Differences of Complex Numbers**

To add (or subtract) two complex numbers, add (or subtract) their real parts and their imaginary parts separately.

Sum of Complex Numbers:

Difference of Complex Numbers:

(3) Add or subtract. Write the answer in standard form.

a. $(8 - i) + (5 + 4i)$ b. $(7 - 6i) - (3 - 6i)$ c. $13 - (2 + 7i) + 5i$

(4) Multiply. Write the answer in standard form.

a. $4i(-6 + i)$ b. $(9 - 2i)(-4 + 7i)$

(5) Perform the operation. Write the answer in standard form.

a. $(9 - i) + (-6 + 7i)$

b. $(3 + 7i) - (8 - 2i)$

c. $-4 - (1 + i) - (5 + 9i)$

d. $(-3i)(10i)$

e. $i(8 - i)$

f. $(3 + i)(5 - i)$

(6) Solve each equation.

a. $x^2 + 4 = 0$ b. $2x^2 - 11 = -47$

(7) Find the zeros of $f(x) = 4x^2 + 20$.

Mixed Practice

Solve each equation.

1. $x^2 = -13$ 2. $x^2 + 11 = 3$ 3. $3x^2 - 7 = -31$

Find the zeros of the function.

4. $f(x) = x^2 + 7$ 5. $f(x) = -x^2 - 4$ 6. $f(x) = 9x^2 + 1$