CCSS Advanced Algebra 4 Operations with Complex Numbers Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Use an area model to show that the function is equivalent to in Standard Form.

2. *Addition and Subtraction of Complex Numbers (think like terms…)*

Simplify each sum or difference to the form .

* 1. b. c.

3. *Complex Equations*. Check your answers.

a. Solve for b. Solve for

4. Two Complex Numbers are called **Conjugates** if they are in the form and .

a. Which of the following pairs of complex numbers are conjugates? Select all that apply.

b. What happens when you add conjugates? In other words, what is

c. What happens when you subtract conjugates? In other words, what is ?

4. *Multiplication of Complex Numbers*:

Use an Area Model to complete each product. Write the answer in the form .

a. b. c.

d. e.

5. Given your answer to parts (d) and (e), what is the product of Conjugate Complex Numbers? In other words, what is for any values of and ?

6. a. Find the roots of and show they are Conjugate Complex Numbers.

b. Find the roots of and show they are Conjugate Complex Numbers.

c. Use the Quadratic Formula to explain why the complex roots of must be conjugates.

7. A polynomial has roots . Write the polynomial in Standard Form.

8. Challenge: Solve Solve for .

9. Practice Rational Expressions:

Simplify each of the following:

a. b. c.

d. e. f.