

Name _____

**2-4 Additional Practice****Complex Numbers and Operations**

Do 1-16

Use square roots to solve each equation. Write your solutions using the imaginary unit, i .

1. $x^2 = -81$

2. $x^2 = -625$

3. $x^2 = -144$

Solve each problem.

4. $(-2 + 3i) + (5 - 2i)$

5. $(-6 + 7i) + (6 - 7i)$

6. $(8 + 5i) + (6 - 7i)$

Write each product in the form $a + bi$.

7. $(4 - 3i)(-5 + 4i)$

8. $(2 - i)(-3 + 6i)$

9. $(5 - 3i)(5 + 3i)$

Write the quotient in the form $a + bi$.

10. $\frac{5 + 2i}{4i}$

11. $\frac{3 - 2i}{4 - 3i}$

12. $\frac{3i}{-2 + i}$

13. Why does multiplying $a + bi$ by the complex conjugate $a - bi$ eliminate i from the expression?

Solve the equations below using factoring.

14. $x^2 + 36 = 0$

15. $x^2 + 4 = 0$

16. $x^2 + 1 = 0$

Bonus → 17. The total resistance of a circuit is given by the formula $R_T = \frac{1}{R_1} + \frac{1}{R_2}$.
 $R_1 = 4 + 6i$ ohms and $R_2 = 2 - 4i$ ohms. What is R_T ?