Review: Use the product of conjugates to multiply. $(a-b)(a+b)=a^2-b^2$

a. $(2-i)(2+i)$

b. $(4+2i)(4-2i)$

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

Multiplying Complex Conjugates: When multiplying the conjugates of complex numbers, we can _____ the i and _____ the squares.

$$(a-bi)(a+bi)=a^2+b^2$$

Practice: Simplify by using the rule above. You may show NO work if you prefer.

a. $(5+i)(5-i)$

b. $(10+3i)(10-3i)$

c. $(12-7i)(12+7i)$

d. $(8+9i)(8-9i)$

Dividing Complex Numbers

When dividing complex numbers, there cannot be complex numbers in the denominator. In order to simplify, we have to multiply the denominator by its _____; this process is called _____

Examples: Perform the given operation. Leave all answers in standard form $a+bi$.

a. $\dfrac{4}{3+2i}$

b. $\dfrac{6}{5-i}$

Practice: Perform the given operation. Leave all answers in standard form $a+bi$.

1. $\dfrac{3}{1+i}$

2. $\dfrac{6}{2-3i}$

3. $\dfrac{5}{2-i}$

Examples: Perform the given operation. Leave all answers in standard form $a+bi$.

    c. $\dfrac{3+2i}{2-i}$ d. $\dfrac{6-4i}{1-i}$

Practice: Perform the given operation. Leave all answers in standard form $a+bi$.

4. $\dfrac{3+3i}{4+i}$ 5. $\dfrac{1-2i}{3-5i}$ 6. $\dfrac{3-i}{2+i}$

7. $\dfrac{1}{3-2i}+\left(4-i\right)$ 8. $\dfrac{1}{3+5i}-\left(6-2i\right)$ 9. $\dfrac{4-i}{-1+5i}+\dfrac{1}{1+i}$