

**Algebra II**  
**Lesson #5 Unit 5**  
**Class Worksheet #5**  
**For Worksheet #6**

## Algebra II Class Worksheet #5 Unit 5

Perform the indicated operations. Express complex answers in a + bi form.

1.  $\frac{8i}{4i} =$

2.  $\frac{8}{4i} =$

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Division problems are written using fraction notation.

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Perform the indicated operations. Express complex answers in  $a + bi$  form.

1.  $\frac{8i}{4i} =$

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Division problems are written using fraction notation.  $\frac{n}{d} =$

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Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

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Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

This problem involves dividing an imaginary number by an imaginary number.

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**This problem involves dividing an imaginary number by an imaginary number. In problems like this, you should treat the imaginary number i like a variable.**



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**This problem involves dividing an imaginary number by an imaginary number. In problems like this, you should treat the imaginary number i like a variable. Since i is a factor of both terms, you can ‘reduce’ the fraction.**

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Perform the indicated operations. Express complex answers in  $a + bi$  form.

1.  $\frac{8i}{4i} = \frac{8}{4}$

2.  $\frac{8}{4i} =$

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

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## Algebra II Class Worksheet #5 Unit 5

Perform the indicated operations. Express complex answers in a + bi form.

$$1. \quad \frac{8i}{4i} = \frac{8}{4} = 2$$

$$2. \quad \frac{8}{4i} =$$

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

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Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

**This problem involves dividing an imaginary number by an imaginary number. In problems like this, you should treat the imaginary number i like a variable. Since i is a factor of both terms, you can ‘reduce’ the fraction. An imaginary number divided by an imaginary number is a real number.**

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1.  $\frac{8i}{4i} = \frac{8}{4} = 2$

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This problem involves dividing a real number by an imaginary number.

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**This problem involves dividing a real number by an imaginary number. In problems like this, you must make the divisor, the denominator, a real number.**



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**This problem involves dividing a real number by an imaginary number. In problems like this, you must make the divisor, the denominator, a real number. Multiply both terms of the fraction by  $i$ .**

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Perform the indicated operations. Express complex answers in a + bi form.

1.  $\frac{8i}{4i} = \frac{8}{4} = 2$

2.  $\frac{8}{4i} = \frac{8i}{4i^2}$

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

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**This problem involves dividing a real number by an imaginary number. In problems like this, you must make the divisor, the denominator, a real number. Multiply both terms of the fraction by i. Since  $i^2 = -1$ , the divisor is now a real number.**

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$$1. \quad \frac{8i}{4i} = \frac{8}{4} = 2$$

$$2. \quad \frac{8}{4i} = \frac{8i}{4i^2} = \frac{8i}{-4}$$

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

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**This problem involves dividing a real number by an imaginary number. In problems like this, you must make the divisor, the denominator, a real number. Multiply both terms of the fraction by i. Since  $i^2 = -1$ , the divisor is now a real number. The division proceeds as if i was a variable.**

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1.  $\frac{8i}{4i} = \frac{8}{4} = 2$

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Perform the indicated operations. Express complex answers in  $a + bi$  form.

3.  $\frac{6 + 9i}{3} =$

4.  $\frac{4 - 9i}{6} =$

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

## Algebra II Class Worksheet #5 Unit 5

Perform the indicated operations. Express complex answers in a + bi form.

$$3. \quad \frac{6+9i}{3} =$$

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$$3. \quad \frac{6+9i}{3} =$$

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Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

These problems involve dividing a complex number by a real number.

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Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

**These problems involve dividing a complex number by a real number. In problems like these, the number i is treated as a variable.**

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$$3. \quad \frac{6+9i}{3} =$$

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Perform the indicated operations. Express complex answers in a + bi form.

$$3. \quad \frac{6+9i}{3} = \frac{6}{3}$$

$$4. \quad \frac{4-9i}{6} =$$

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

**These problems involve dividing a complex number by a real number. In problems like these, the number  $i$  is treated as a variable. Simply divide both terms of the complex number by the real number.**

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Perform the indicated operations. Express complex answers in a + bi form.

$$3. \quad \frac{6+9i}{3} = \frac{6}{3} +$$

$$4. \quad \frac{4-9i}{6} =$$

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

**These problems involve dividing a complex number by a real number. In problems like these, the number i is treated as a variable. Simply divide both terms of the complex number by the real number.**



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Perform the indicated operations. Express complex answers in a + bi form.

$$3. \quad \frac{6+9i}{3} = \frac{6}{3} + \frac{9i}{3}$$

$$4. \quad \frac{4-9i}{6} =$$

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

**These problems involve dividing a complex number by a real number. In problems like these, the number  $i$  is treated as a variable. Simply divide both terms of the complex number by the real number.**

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Perform the indicated operations. Express complex answers in a + bi form.

$$3. \quad \frac{6+9i}{3} = \frac{6}{3} + \frac{9i}{3} =$$

$$4. \quad \frac{4-9i}{6} =$$

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

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$$3. \quad \frac{6+9i}{3} = \frac{6}{3} + \frac{9i}{3} = 2$$

$$4. \quad \frac{4-9i}{6} =$$

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

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Perform the indicated operations. Express complex answers in a + bi form.

$$3. \quad \frac{6+9i}{3} = \frac{6}{3} + \frac{9i}{3} = 2 +$$

$$4. \quad \frac{4-9i}{6} =$$

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

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$$3. \quad \frac{6+9i}{3} = \frac{6}{3} + \frac{9i}{3} = 2 + 3i$$

$$4. \quad \frac{4-9i}{6} =$$

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

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$$3. \quad \frac{6+9i}{3} = \frac{6}{3} + \frac{9i}{3} = 2 + 3i$$

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Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

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Perform the indicated operations. Express complex answers in a + bi form.

$$3. \quad \frac{6+9i}{3} = \frac{6}{3} + \frac{9i}{3} = 2 + 3i \quad 4. \quad \frac{4-9i}{6} = \frac{4}{6} - \frac{9i}{6} = \frac{2}{3} - \frac{3}{2}i$$

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Perform the indicated operations. Express complex answers in  $a + bi$  form.

$$3. \quad \frac{6+9i}{3} = \frac{6}{3} + \frac{9i}{3} = 2 + 3i \qquad 4. \quad \frac{4-9i}{6} = \frac{4}{6} - \frac{9i}{6} = \frac{2}{3} - \frac{3}{2}i$$

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Perform the indicated operations. Express complex answers in  $a + bi$  form.

5.  $\frac{4 - 8i}{4i} =$

6.  $\frac{4 - 2i}{-2i} =$

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .



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Perform the indicated operations. Express complex answers in a + bi form.

$$5. \quad \frac{4 - 8i}{4i} =$$

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These problems involve dividing a complex number by an imaginary number.

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**These problems involve dividing a complex number by an imaginary number. In problems like these, you must make the divisor a real number.**

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$$5. \quad \frac{4 - 8i}{4i} =$$

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Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

**These problems involve dividing a complex number by an imaginary number. In problems like these, you must make the divisor a real number. Multiply both terms of the fraction by  $i$  and simplify the resulting expressions.**

## Algebra II Class Worksheet #5 Unit 5

Perform the indicated operations. Express complex answers in a + bi form.

$$5. \quad \frac{4 - 8i}{4i} = \frac{i(4 - 8i)}{4i^2} =$$

$$6. \quad \frac{4 - 2i}{-2i} =$$

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

These problems involve dividing a complex number by an imaginary number. In problems like these, you must make the divisor a real number. Multiply both terms of the fraction by  $i$  and simplify the resulting expressions.

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$$6. \quad \frac{4 - 2i}{-2i} =$$

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

These problems involve dividing a complex number by an imaginary number. In problems like these, you must make the divisor a real number. Multiply both terms of the fraction by  $i$  and simplify the resulting expressions. Remember that  $i^2 = -1$ .

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Perform the indicated operations. Express complex answers in a + bi form.

$$5. \quad \frac{4 - 8i}{4i} = \frac{i(4 - 8i)}{4i^2} =$$
$$= \frac{\quad}{-4}$$

$$6. \quad \frac{4 - 2i}{-2i} =$$

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

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Perform the indicated operations. Express complex answers in a + bi form.

$$\begin{aligned} 5. \quad \frac{4 - 8i}{4i} &= \frac{i(4 - 8i)}{4i^2} = \\ &= \frac{4i - 8i^2}{-4} \end{aligned}$$

$$6. \quad \frac{4 - 2i}{-2i} =$$

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

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$$\begin{aligned} 5. \quad \frac{4 - 8i}{4i} &= \frac{i(4 - 8i)}{4i^2} = \\ &= \frac{4i - 8i^2}{-4} = \frac{4i + 8}{-4} \end{aligned}$$

$$6. \quad \frac{4 - 2i}{-2i} =$$

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

These problems involve dividing a complex number by an imaginary number. In problems like these, you must make the divisor a real number. Multiply both terms of the fraction by  $i$  and simplify the resulting expressions. Remember that  $i^2 = -1$ .

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$$\begin{aligned} 5. \quad \frac{4 - 8i}{4i} &= \frac{i(4 - 8i)}{4i^2} = \\ &= \frac{4i - 8i^2}{-4} = \frac{4i + 8}{-4} = \end{aligned}$$

$$6. \quad \frac{4 - 2i}{-2i} =$$

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

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7.  $\frac{5 + 6i}{-3i} =$

8.  $\frac{3 + 7i}{3i} =$

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$$\begin{aligned} 7. \quad \frac{5+6i}{-3i} &= \frac{i(5+6i)}{-3i^2} = \\ &= \frac{5i+6i^2}{3} = \frac{5i-6}{3} = \\ &= \frac{-6+5i}{3} = -2 + \frac{5}{3}i \end{aligned}$$

$$8. \quad \frac{3+7i}{3i} =$$

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

These problems involve dividing a complex number by an imaginary number. In problems like these, you must make the divisor a real number. Multiply both terms of the fraction by  $i$  and simplify the resulting expressions. Remember that  $i^2 = -1$ . Express the complex number in the numerator in a + bi form and complete the division.

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**These problems involve dividing a complex number by an imaginary number. In problems like these, you must make the divisor a real number. Multiply both terms of the fraction by i and simplify the resulting expressions.**

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$$\begin{aligned} 8. \quad \frac{3+7i}{3i} &= \frac{i(3+7i)}{3i^2} = \\ &= \frac{-3}{-3} \end{aligned}$$

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Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

These problems involve dividing a complex number by an imaginary number. In problems like these, you must make the divisor a real number. Multiply both terms of the fraction by  $i$  and simplify the resulting expressions. Remember that  $i^2 = -1$ . Express the complex number in the numerator in  $a + bi$  form and complete the division.

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Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

These problems involve dividing a complex number by an imaginary number. In problems like these, you must make the divisor a real number. Multiply both terms of the fraction by  $i$  and simplify the resulting expressions. Remember that  $i^2 = -1$ . Express the complex number in the numerator in  $a + bi$  form and complete the division.

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Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

These problems involve dividing a complex number by an imaginary number. In problems like these, you must make the divisor a real number. Multiply both terms of the fraction by  $i$  and simplify the resulting expressions. Remember that  $i^2 = -1$ . Express the complex number in the numerator in  $a + bi$  form and complete the division. A complex number divided by an imaginary number is a complex number.

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Perform the indicated operations. Express complex answers in  $a + bi$  form.

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## Algebra II Class Worksheet #5 Unit 5

Perform the indicated operations. Express complex answers in  $a + bi$  form.

9.  $\frac{6 + 17i}{4 + 3i} =$

10.  $\frac{17 + i}{3 - i} =$

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

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Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

## Algebra II Class Worksheet #5 Unit 5

Perform the indicated operations. Express complex answers in a + bi form.

$$9. \frac{6 + 17i}{4 + 3i} =$$

$$10. \frac{17 + i}{3 - i} =$$

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

These problems involve dividing a complex number by a complex number.



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Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

**These problems involve dividing a complex number by a complex number. In problems like these, you must make the divisor a real number.**

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$$9. \quad \frac{6 + 17i}{4 + 3i} =$$

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These problems involve dividing a complex number by a complex number. In problems like these, you must make the divisor a real number. Multiply both terms of the fraction by the complex conjugate of the divisor

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**a + bi**

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$a + bi$  and  $a - bi$

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$$9. \frac{6 + 17i}{4 + 3i} =$$

$$10. \frac{17 + i}{3 - i} =$$

$a + bi$  and  $a - bi$  are complex conjugates of each other.

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

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$$9. \frac{6 + 17i}{4 + 3i} =$$

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$a + bi$  and  $a - bi$  are complex conjugates of each other. The product of a complex number and its complex conjugate is always a real number.

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

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These problems involve dividing a complex number by a complex number. In problems like these, you must make the divisor a real number. Multiply both terms of the fraction by the complex conjugate of the divisor

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Perform the indicated operations. Express complex answers in  $a + bi$  form.

$$9. \frac{6 + 17i}{4 + 3i} = \frac{\quad}{(4 + 3i)(4 - 3i)}$$

$$10. \frac{17 + i}{3 - i} =$$

$a + bi$  and  $a - bi$  are complex conjugates of each other. The product of a complex number and its complex conjugate is always a real number.

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

These problems involve dividing a complex number by a complex number. In problems like these, you must make the divisor a real number. Multiply both terms of the fraction by the complex conjugate of the divisor

## Algebra II Class Worksheet #5 Unit 5

Perform the indicated operations. Express complex answers in a + bi form.

$$9. \quad \frac{6 + 17i}{4 + 3i} = \frac{(6 + 17i)(4 - 3i)}{(4 + 3i)(4 - 3i)}$$

$$10. \quad \frac{17 + i}{3 - i} =$$

$a + bi$  and  $a - bi$  are complex conjugates of each other. The product of a complex number and its complex conjugate is always a real number.

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

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Perform the indicated operations. Express complex answers in a + bi form.

$$9. \quad \frac{6 + 17i}{4 + 3i} = \frac{(6 + 17i)(4 - 3i)}{(4 + 3i)(4 - 3i)} =$$
$$=$$

$$10. \quad \frac{17 + i}{3 - i} =$$


$a + bi$  and  $a - bi$  are complex conjugates of each other. The product of a complex number and its complex conjugate is always a real number.

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$$9. \quad \frac{6 + 17i}{4 + 3i} = \frac{(6 + 17i)(4 - 3i)}{(4 + 3i)(4 - 3i)} =$$

$$= \underline{\hspace{2cm}}$$

$$10. \quad \frac{17 + i}{3 - i} =$$


$a + bi$  and  $a - bi$  are complex conjugates of each other. The product of a complex number and its complex conjugate is always a real number.

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$$9. \quad \frac{6 + 17i}{4 + 3i} = \frac{(6 + 17i)(4 - 3i)}{(4 + 3i)(4 - 3i)} =$$

$$= \frac{\quad}{16}$$

$$10. \quad \frac{17 + i}{3 - i} =$$


$a + bi$  and  $a - bi$  are complex conjugates of each other. The product of a complex number and its complex conjugate is always a real number.

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

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$$9. \quad \frac{6 + 17i}{4 + 3i} = \frac{(6 + 17i)(4 - 3i)}{(4 + 3i)(4 - 3i)} =$$

$$= \frac{\quad}{16}$$

$$10. \quad \frac{17 + i}{3 - i} =$$


$a + bi$  and  $a - bi$  are complex conjugates of each other. The product of a complex number and its complex conjugate is always a real number.

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Perform the indicated operations. Express complex answers in  $a + bi$  form.

$$9. \quad \frac{6 + 17i}{4 + 3i} = \frac{(6 + 17i)(4 - 3i)}{(4 + 3i)(4 - 3i)} =$$

$$= \frac{\quad}{16 - 12i}$$

$$10. \quad \frac{17 + i}{3 - i} =$$

$a + bi$  and  $a - bi$  are complex conjugates of each other. The product of a complex number and its complex conjugate is always a real number.


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$$9. \quad \frac{6 + 17i}{4 + 3i} = \frac{(6 + 17i)(4 - 3i)}{(4 + 3i)(4 - 3i)} =$$

$$= \frac{\quad}{16 - 12i}$$

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$a + bi$  and  $a - bi$  are complex conjugates of each other. The product of a complex number and its complex conjugate is always a real number.

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

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## Algebra II Class Worksheet #5 Unit 5

Perform the indicated operations. Express complex answers in  $a + bi$  form.

$$9. \quad \frac{6 + 17i}{4 + 3i} = \frac{(6 + 17i)(4 - 3i)}{(4 + 3i)(4 - 3i)} =$$

$$= \frac{\quad}{16 - 12i + 12i}$$

$$10. \quad \frac{17 + i}{3 - i} =$$


$a + bi$  and  $a - bi$  are complex conjugates of each other. The product of a complex number and its complex conjugate is always a real number.

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

These problems involve dividing a complex number by a complex number. In problems like these, you must make the divisor a real number. Multiply both terms of the fraction by the complex conjugate of the divisor and simplify the resulting expressions.

## Algebra II Class Worksheet #5 Unit 5

Perform the indicated operations. Express complex answers in  $a + bi$  form.

$$9. \quad \frac{6 + 17i}{4 + 3i} = \frac{(6 + 17i)(4 - 3i)}{(4 + 3i)(4 - 3i)} =$$

$$= \frac{\quad}{16 - 12i + 12i}$$

$$10. \quad \frac{17 + i}{3 - i} =$$


$a + bi$  and  $a - bi$  are complex conjugates of each other. The product of a complex number and its complex conjugate is always a real number.

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

These problems involve dividing a complex number by a complex number. In problems like these, you must make the divisor a real number. Multiply both terms of the fraction by the complex conjugate of the divisor and simplify the resulting expressions.

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$$9. \quad \frac{6 + 17i}{4 + 3i} = \frac{(6 + 17i)(4 - 3i)}{(4 + 3i)(4 - 3i)} =$$

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$$\begin{aligned} 9. \quad \frac{6 + 17i}{4 + 3i} &= \frac{(6 + 17i)(4 - 3i)}{(4 + 3i)(4 - 3i)} = \\ &= \frac{24 - 18i + 68i - 51i^2}{16 - 12i + 12i - 9i^2} = \\ &= \frac{75 + 50i}{25} = 3 + 2i \end{aligned}$$

$$10. \quad \frac{17 + i}{3 - i} = \frac{\quad}{(3 - i)(3 + i)}$$

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Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

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$$\begin{aligned} 10. \quad \frac{17 + i}{3 - i} &= \frac{(17 + i)(3 + i)}{(3 - i)(3 + i)} = \\ &= \frac{51 + 17i + 3i + i^2}{9 + 3i - 3i - i^2} = \\ &= \frac{50 + 20i}{10 + 0i} \end{aligned}$$

$a + bi$  and  $a - bi$  are complex conjugates of each other. The product of a complex number and its complex conjugate is always a real number.

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Perform the indicated operations. Express complex answers in  $a + bi$  form.

11.  $\frac{-13 - 13i}{2 - 3i} =$

12.  $\frac{22 - 7i}{3 + 2i} =$

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## Algebra II Class Worksheet #5 Unit 5

Perform the indicated operations. Express complex answers in a + bi form.

$$11. \frac{-13 - 13i}{2 - 3i} = \frac{\quad}{(2 - 3i)(2 + 3i)}$$

$$12. \frac{22 - 7i}{3 + 2i} =$$

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Perform the indicated operations. Express complex answers in a + bi form.

$$11. \frac{-13 - 13i}{2 - 3i} = \frac{(-13 - 13i)(2 + 3i)}{(2 - 3i)(2 + 3i)}$$

$$12. \frac{22 - 7i}{3 + 2i} =$$

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$$11. \quad \frac{-13 - 13i}{2 - 3i} = \frac{(-13 - 13i)(2 + 3i)}{(2 - 3i)(2 + 3i)} =$$
$$= \underline{\hspace{4cm}}$$

$$12. \quad \frac{22 - 7i}{3 + 2i} =$$


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$$= \underline{\hspace{2cm}}$$

$$12. \quad \frac{22 - 7i}{3 + 2i} =$$


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$$11. \quad \frac{-13 - 13i}{2 - 3i} = \frac{(-13 - 13i)(2 + 3i)}{(2 - 3i)(2 + 3i)} =$$
$$= \frac{-26 - 39i}{4 + 6i - 6i - 9i^2}$$

$$12. \quad \frac{22 - 7i}{3 + 2i} =$$

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$$\begin{aligned} 12. \quad \frac{22 - 7i}{3 + 2i} &= \frac{(22 - 7i)(3 - 2i)}{(3 + 2i)(3 - 2i)} = \\ &= \frac{\quad}{9} \end{aligned}$$


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$$\begin{aligned} 12. \quad \frac{22 - 7i}{3 + 2i} &= \frac{(22 - 7i)(3 - 2i)}{(3 + 2i)(3 - 2i)} = \\ &= \frac{\quad\quad\quad}{9 - 6i} \end{aligned}$$


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$a + bi$  and  $a - bi$  are complex conjugates of each other. The product of a complex number and its complex conjugate is always a real number.

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

These problems involve dividing a complex number by a complex number. In problems like these, you must make the divisor a real number. Multiply both terms of the fraction by the complex conjugate of the divisor and simplify the resulting expressions. Remember that  $i^2 = -1$ .

## Algebra II Class Worksheet #5 Unit 5

Perform the indicated operations. Express complex answers in a + bi form.

$$\begin{aligned} 11. \quad \frac{-13 - 13i}{2 - 3i} &= \frac{(-13 - 13i)(2 + 3i)}{(2 - 3i)(2 + 3i)} = \\ &= \frac{-26 - 39i - 26i - 39i^2}{4 + 6i - 6i - 9i^2} = \\ &= \frac{13 - 65i}{13} = 1 - 5i \end{aligned}$$

$$\begin{aligned} 12. \quad \frac{22 - 7i}{3 + 2i} &= \frac{(22 - 7i)(3 - 2i)}{(3 + 2i)(3 - 2i)} = \\ &= \frac{66 - 44i - 21i + 14i^2}{9 - 6i + 6i - 4i^2} = \\ &= \frac{52 - 65i}{13} = \end{aligned}$$

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$$\begin{aligned} 11. \quad \frac{-13 - 13i}{2 - 3i} &= \frac{(-13 - 13i)(2 + 3i)}{(2 - 3i)(2 + 3i)} = \\ &= \frac{-26 - 39i - 26i - 39i^2}{4 + 6i - 6i - 9i^2} = \\ &= \frac{13 - 65i}{13} = 1 - 5i \end{aligned}$$

$$\begin{aligned} 12. \quad \frac{22 - 7i}{3 + 2i} &= \frac{(22 - 7i)(3 - 2i)}{(3 + 2i)(3 - 2i)} = \\ &= \frac{66 - 44i - 21i + 14i^2}{9 - 6i + 6i - 4i^2} = \\ &= \frac{52 - 65i}{13} = 4 \end{aligned}$$

$a + bi$  and  $a - bi$  are complex conjugates of each other. The product of a complex number and its complex conjugate is always a real number.

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## Algebra II Class Worksheet #5 Unit 5

Perform the indicated operations. Express complex answers in  $a + bi$  form.

13.  $\frac{3 + 5i}{1 - 2i} =$

14.  $\frac{4 - i}{1 + 3i} =$

$a + bi$  and  $a - bi$  are complex conjugates of each other. The product of a complex number and its complex conjugate is always a real number.

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## Algebra II Class Worksheet #5 Unit 5

Perform the indicated operations. Express complex answers in a + bi form.

$$13. \frac{3 + 5i}{1 - 2i} = \frac{\quad}{(1 - 2i)(1 + 2i)}$$

$$14. \frac{4 - i}{1 + 3i} =$$

$a + bi$  and  $a - bi$  are complex conjugates of each other. The product of a complex number and its complex conjugate is always a real number.

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

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## Algebra II Class Worksheet #5 Unit 5

Perform the indicated operations. Express complex answers in a + bi form.

$$13. \frac{3 + 5i}{1 - 2i} = \frac{(3 + 5i)(1 + 2i)}{(1 - 2i)(1 + 2i)}$$

$$14. \frac{4 - i}{1 + 3i} =$$


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## Algebra II Class Worksheet #5 Unit 5

Perform the indicated operations. Express complex answers in a + bi form.

$$13. \frac{3+5i}{1-2i} = \frac{(3+5i)(1+2i)}{(1-2i)(1+2i)} =$$
  
$$= \underline{\hspace{2cm}}$$

$$14. \frac{4-i}{1+3i} =$$


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## Algebra II Class Worksheet #5 Unit 5

Perform the indicated operations. Express complex answers in  $a + bi$  form.

$$13. \quad \frac{3 + 5i}{1 - 2i} = \frac{(3 + 5i)(1 + 2i)}{(1 - 2i)(1 + 2i)} =$$

$$= \frac{\quad}{1}$$

$$14. \quad \frac{4 - i}{1 + 3i} =$$

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Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

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Perform the indicated operations. Express complex answers in  $a + bi$  form.

$$13. \quad \frac{3 + 5i}{1 - 2i} = \frac{(3 + 5i)(1 + 2i)}{(1 - 2i)(1 + 2i)} =$$

$$= \frac{1}{1}$$

$$14. \quad \frac{4 - i}{1 + 3i} =$$


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$$13. \quad \frac{3 + 5i}{1 - 2i} = \frac{(3 + 5i)(1 + 2i)}{(1 - 2i)(1 + 2i)} =$$

$$= \frac{\quad}{1 + 2i}$$

$$14. \quad \frac{4 - i}{1 + 3i} =$$


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$$13. \quad \frac{3 + 5i}{1 - 2i} = \frac{(3 + 5i)(1 + 2i)}{(1 - 2i)(1 + 2i)} =$$

$$= \frac{\quad}{1 + 2i}$$

$$14. \quad \frac{4 - i}{1 + 3i} =$$


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$$13. \quad \frac{3 + 5i}{1 - 2i} = \frac{(3 + 5i)(1 + 2i)}{(1 - 2i)(1 + 2i)} =$$

$$= \frac{\quad}{1 + 2i - 2i}$$

$$14. \quad \frac{4 - i}{1 + 3i} =$$


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Perform the indicated operations. Express complex answers in  $a + bi$  form.

$$13. \quad \frac{3 + 5i}{1 - 2i} = \frac{(3 + 5i)(1 + 2i)}{(1 - 2i)(1 + 2i)} =$$

$$= \frac{1 + 2i - 2i - 4i^2}{1 + 2i - 2i - 4i^2}$$

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## Algebra II Class Worksheet #5 Unit 5

Perform the indicated operations. Express complex answers in a + bi form.

$$13. \frac{3+5i}{1-2i} = \frac{(3+5i)(1+2i)}{(1-2i)(1+2i)} =$$
$$= \frac{1+2i-2i-4i^2}{1+2i-2i-4i^2}$$

$$14. \frac{4-i}{1+3i} =$$

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$$13. \quad \frac{3 + 5i}{1 - 2i} = \frac{(3 + 5i)(1 + 2i)}{(1 - 2i)(1 + 2i)} =$$
$$= \frac{3}{1 + 2i - 2i - 4i^2}$$

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$$13. \quad \frac{3 + 5i}{1 - 2i} = \frac{(3 + 5i)(1 + 2i)}{(1 - 2i)(1 + 2i)} =$$
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$$\begin{aligned} 13. \quad \frac{3 + 5i}{1 - 2i} &= \frac{(3 + 5i)(1 + 2i)}{(1 - 2i)(1 + 2i)} = \\ &= \frac{3 + 6i + 5i + 10i^2}{1 + 2i - 2i - 4i^2} = \\ &= \frac{3 + 11i + 10(-1)}{1 - 4(-1)} = \end{aligned}$$

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$$\begin{aligned} 13. \quad \frac{3 + 5i}{1 - 2i} &= \frac{(3 + 5i)(1 + 2i)}{(1 - 2i)(1 + 2i)} = \\ &= \frac{3 + 6i + 5i + 10i^2}{1 + 2i - 2i - 4i^2} = \\ &= \frac{5 + 0i}{5} \end{aligned}$$

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$$14. \quad \frac{4 - i}{1 + 3i} =$$

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Perform the indicated operations. Express complex answers in a + bi form.

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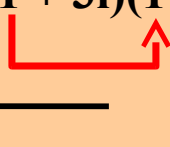
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## Algebra II Class Worksheet #5 Unit 5

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16.  $\frac{-2}{3-i} =$

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$$15. \quad \frac{5}{1+2i} = \frac{5(1-2i)}{(1+2i)(1-2i)} =$$

$$= \underline{\hspace{2cm}}$$

$$16. \quad \frac{-2}{3-i} =$$

$a + bi$  and  $a - bi$  are complex conjugates of each other. The product of a complex number and its complex conjugate is always a real number.


Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

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$$\begin{aligned} 16. \quad \frac{-2}{3-i} &= \frac{-2(3+i)}{(3-i)(3+i)} = \\ &= \frac{-2(3+i)}{9-i^2} = \end{aligned}$$

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These problems involve dividing an imaginary number by a complex number. In problems like these, you must make the divisor a real number.

## Algebra II Class Worksheet #5 Unit 5

Perform the indicated operations. Express complex answers in  $a + bi$  form.

$$17. \frac{5i}{1 + 2i} =$$

$$18. \frac{-2i}{3 - i} =$$

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These problems involve dividing an imaginary number by a complex number. In problems like these, you must make the divisor a real number. Multiply both terms of the fraction by the complex conjugate of the divisor

## Algebra II Class Worksheet #5 Unit 5

Perform the indicated operations. Express complex answers in  $a + bi$  form.

$$17. \frac{5i}{1+2i} = \frac{\quad}{(1+2i)(1-2i)}$$

$$18. \frac{-2i}{3-i} =$$

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## Algebra II Class Worksheet #5 Unit 5

Perform the indicated operations. Express complex answers in  $a + bi$  form.

$$17. \frac{5i}{1+2i} = \frac{5i(1-2i)}{(1+2i)(1-2i)}$$

$$18. \frac{-2i}{3-i} =$$


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$$17. \quad \frac{5i}{1+2i} = \frac{5i(1-2i)}{(1+2i)(1-2i)} =$$

$$= \underline{\hspace{2cm}}$$

$$18. \quad \frac{-2i}{3-i} =$$


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$$= \frac{\quad}{1}$$

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$$17. \quad \frac{5i}{1+2i} = \frac{5i(1-2i)}{(1+2i)(1-2i)} =$$

$$= \frac{\quad}{1-2i+2i}$$

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$$17. \quad \frac{5i}{1+2i} = \frac{5i(1-2i)}{(1+2i)(1-2i)} =$$

$$= \frac{\quad}{1 - 2i + 2i - 4i^2}$$

$$18. \quad \frac{-2i}{3-i} =$$

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## Algebra II Class Worksheet #5 Unit 5

Perform the indicated operations. Express complex answers in a + bi form.

$$17. \frac{5i}{1+2i} = \frac{5i(1-2i)}{(1+2i)(1-2i)} =$$
$$= \frac{1-2i+2i-4i^2}{1-2i+2i-4i^2}$$

$$18. \frac{-2i}{3-i} =$$

**a + bi and a – bi are complex conjugates of each other. The product of a complex number and its complex conjugate is always a real number.**

**Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .**

**These problems involve dividing an imaginary number by a complex number. In problems like these, you must make the divisor a real number. Multiply both terms of the fraction by the complex conjugate of the divisor and simplify the resulting expressions.**

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Perform the indicated operations. Express complex answers in  $a + bi$  form.

$$17. \frac{5i}{1+2i} = \frac{5i(1-2i)}{(1+2i)(1-2i)} =$$
$$= \frac{5i}{1-2i+2i-4i^2}$$

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Perform the indicated operations. Express complex answers in a + bi form.

$$17. \frac{5i}{1+2i} = \frac{5i(1-2i)}{(1+2i)(1-2i)} =$$
$$= \frac{5i - 10i^2}{1 - 2i + 2i - 4i^2}$$

$$18. \frac{-2i}{3-i} =$$

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$$= \frac{5i - 10i^2}{\underset{\uparrow}{1} - 2i + 2i - \underset{\uparrow}{4i^2}} = \underline{\hspace{2cm}}$$

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## Algebra II Class Worksheet #5 Unit 5

Perform the indicated operations. Express complex answers in a + bi form.

$$\begin{aligned} 17. \quad \frac{5i}{1+2i} &= \frac{5i(1-2i)}{(1+2i)(1-2i)} = \\ &= \frac{5i - 10i^2}{1 - 2i + 2i - 4i^2} = \frac{5 + 0i}{5} \end{aligned}$$

$$18. \quad \frac{-2i}{3-i} =$$

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$$17. \frac{5i}{1+2i} = \frac{5i(1-2i)}{(1+2i)(1-2i)} =$$
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$$18. \quad \frac{-2i}{3-i} =$$

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These problems involve dividing an imaginary number by a complex number. In problems like these, you must make the divisor a real number. Multiply both terms of the fraction by the complex conjugate of the divisor and simplify the resulting expressions. Remember that  $i^2 = -1$ . Express the complex number in the numerator in a + bi form. Now that the divisor is a real number, you can complete the division process.

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Perform the indicated operations. Express complex answers in a + bi form.

$$\begin{aligned} 17. \quad \frac{5i}{1+2i} &= \frac{5i(1-2i)}{(1+2i)(1-2i)} = \\ &= \frac{5i - 10i^2}{1 - 2i + 2i - 4i^2} = \frac{5i + 10}{5} = \\ &= \frac{10 + 5i}{5} = 2 \end{aligned}$$

$$18. \quad \frac{-2i}{3-i} =$$

$a + bi$  and  $a - bi$  are complex conjugates of each other. The product of a complex number and its complex conjugate is always a real number.

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

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Perform the indicated operations. Express complex answers in a + bi form.

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$$18. \quad \frac{-2i}{3-i} =$$

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$$\begin{aligned} 17. \quad \frac{5i}{1+2i} &= \frac{5i(1-2i)}{(1+2i)(1-2i)} = \\ &= \frac{5i - 10i^2}{1 - 2i + 2i - 4i^2} = \frac{5i + 10}{5} = \\ &= \frac{10 + 5i}{5} = 2 + i \end{aligned}$$

$$\begin{aligned} 18. \quad \frac{-2i}{3-i} &= \frac{-2i(3+i)}{(3-i)(3+i)} = \\ &= \frac{-6i - 2i^2}{9 + 3i - 3i - i^2} = \frac{-6i}{10} \end{aligned}$$

$a + bi$  and  $a - bi$  are complex conjugates of each other. The product of a complex number and its complex conjugate is always a real number.

Division problems are written using fraction notation.  $\frac{n}{d} = n \div d$ .

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**Write the multiplicative inverse of each of the following using a + bi form.**

**19.  $4 + 3i$**

**20.  $3 - i$**

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$$\frac{1}{4 + 3i} = \frac{\quad}{(4 + 3i)(4 - 3i)}$$

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$$\frac{1}{4 + 3i} = \frac{1(4 - 3i)}{(4 + 3i)(4 - 3i)}$$

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=


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$$\frac{1}{4 + 3i} = \frac{1(4 - 3i)}{(4 + 3i)(4 - 3i)} =$$

$$= \underline{\hspace{2cm}}$$


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$$\frac{1}{4 + 3i} = \frac{1(4 - 3i)}{(4 + 3i)(4 - 3i)} =$$

$$= \frac{1}{16}$$


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$$\frac{1}{4 + 3i} = \frac{1(4 - 3i)}{(4 + 3i)(4 - 3i)} =$$

$$= \frac{1}{16 - 12i}$$


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$$= \frac{\quad}{25}$$

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↑            ↑

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