Concepts of Algebra 2 Notes **Section 4-8: Complex Numbers**

***Objectives:**

*<u>imaginary unit</u>:

$i^2 = -1$ $i = \sqrt{-1}$

*Square Root of a Negative Real Numbe	
*Algebra	*Example

Got It? **1.** How do you write each number in parts (a)-(c) by using the imaginary unit i?

a. $\sqrt{-12}$ **b.** $\sqrt{-25}$ **c.** $\sqrt{-7}$

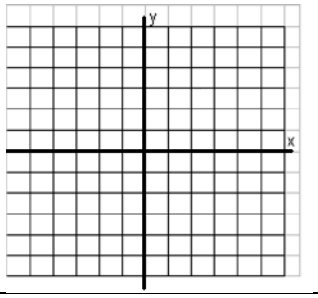
*<u>imaginary number</u>:

*Complex Numbers		

*<u>absolute value of a complex number</u>:	*Complex Number Plane (diagram)

Got It? **2.** What are the graph and absolute value of each number?

a. $5 - i$ **b.** $-3 - 2i$ **c.** $1 + 4i$



*To add or subtract complex numbers,…

Got It? **3.** What is each sum or difference?

a. $(7 - 2i) + (-3 + i)$ **b.** $(1 + 5i) - (3 - 2i)$

c. $(8 + 6i) - (8 - 6i)$ **d.** $(-3 + 9i) + (3 + 9i)$

Multiplying complex numbers: $(a+bi)(c+di)$

Got It? **4.** What is each product?

a. $(7i)(3i)$ **b.** $(2 - 3i)(4 + 5i)$ **c.** $(-4 + 5i)(-4 - 5i)$

complex conjugates: $(a+bi)(a-bi)$

You can use complex conjugates to simplify quotients of complex numbers.

Got It? **5.** What is each quotient?

a. $\frac{5-2i}{3+4i}$ **b.** $\frac{4-i}{6i}$ **c.** $\frac{8-7i}{8+7i}$

Got It? **6.** What are the factored forms of each expression?

a. $5x^2+20$ **b.** x^2+81

Got It? **7.** What are the solutions of each equation?

a. $3x^2-x+2=0$ **b.** $x^2-4x+5=0$

Inclass: p. 253 #12, 16, 22, 26, 30, 38, 42
Homework: p. 253 #9-43(odd)
Interactmath: #9, 11, 12, 13, 14, 21, 23, 29, 33, 35, 41